Vol. XXV APRIL 1931 No. 4

The EXCAVATING ENGINEER

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Diesel Excavators Reclaim Farm Lands on Shores of Azov Sea

Picture Story of Northwestern States Portland Cement Company Quarry

Gilbert Construction Company Building Highway Through West Virginia Mountains

Laying 9-foot Sewer in Kansas City

Shovel Builds Golf Course

Dredging for Beauharnois Canal

Six Companies, Incorporated, to Build Hoover Dam

How Leo C. Sanders Builds Bridges

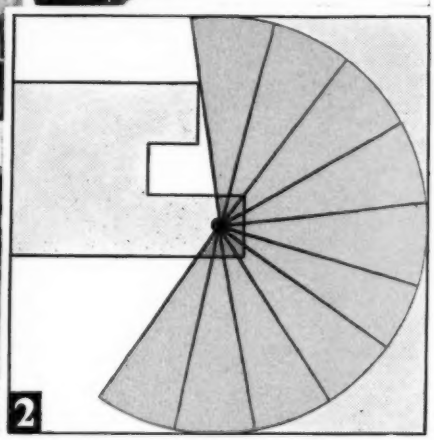
Front Cover Illustration: On the Beauharnois Canal this hydraulic dredge has excavated over 41,000 cubic yards in a single day. See Page 172.

1/2-yard
5/8
3/4
7/8
1
1-1/4
1-1/2
1-3/4
2
2-1/4
2-1/2
3
3-1/2
4
4-1/2
5 and up to 16 yards

hovels
Drag-lines
Clam-shells
Lifting Cranes
Drag-hovels
Magnet Cranes
Tunnel hovels
redges
Drag-line uckets

Gaso-line
Diesel
Gas + Air
Electric
Steam
Diesel-Electric

. . . Vision



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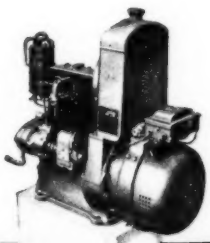

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Model E Kohler Electric Plant—used on pavers and other portable equipment to supply electric current

When night-work is necessary, Kohler Electric Plants supply bright, unfailing light

KOHLER Electric Plants make it possible to keep the job going 24 hours a day. When there's been a long spell of rain — when unexpected fills threaten an upset of original plans — when there's any other surprise handicap that is likely to block the schedule — rely on Kohler Plants to turn night into day.

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Vol. 25 — APRIL 1931 — No. 4

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Monighan Walking Dragline ready to start work on Section 4-D of New Madrid Floodway. J. J. McCaughey Company, and States Construction Company, Chicago, Contractors.

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This Monighan Walking Dragline is in action on the New Madrid floodway job, near East Prairie, Mo. It is a 6-W Walker, one of the larger models; it has a 135 ft. boom, with 5 yd. bucket, and weighs 275 tons.

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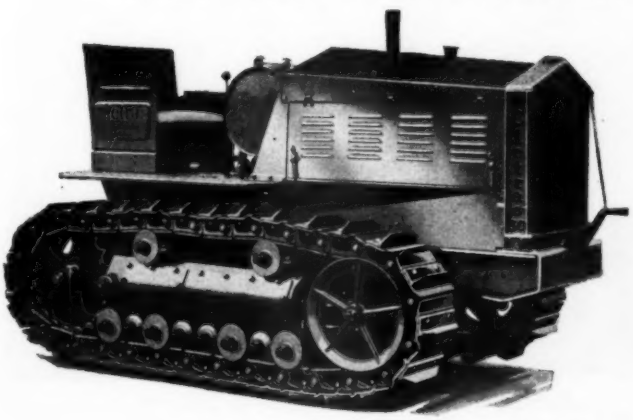
FAST, SURE-FOOTED POWER
That Means SURE SAVINGS!

IT'S that *extra* performance which Cletrac Crawlers are able to put into a job that makes them outstanding favorites with tractor users the world over. Extra power — extra speed — extra ease of operation — these are a few of their features that never fail to make extra savings and earnings.

Cletrac Crawlers turn a bigger proportion of their power into draw-bar action. They travel faster on the straightaways and keep full power on the turns. * They are nimble and flexible and do away with many of the hidden time losses occasioned by slower, less responsive tractors.

But it's not only their ability to crowd more work into a day that makes Cletrac Crawlers so widely preferred. They cut costs, too — with their extraordinary economy of oil and gas and their elimination of "time-out" for daily hand oiling. All Cletrac Crawlers have automatic lubrication to track wheels and other bearings outside the motor.



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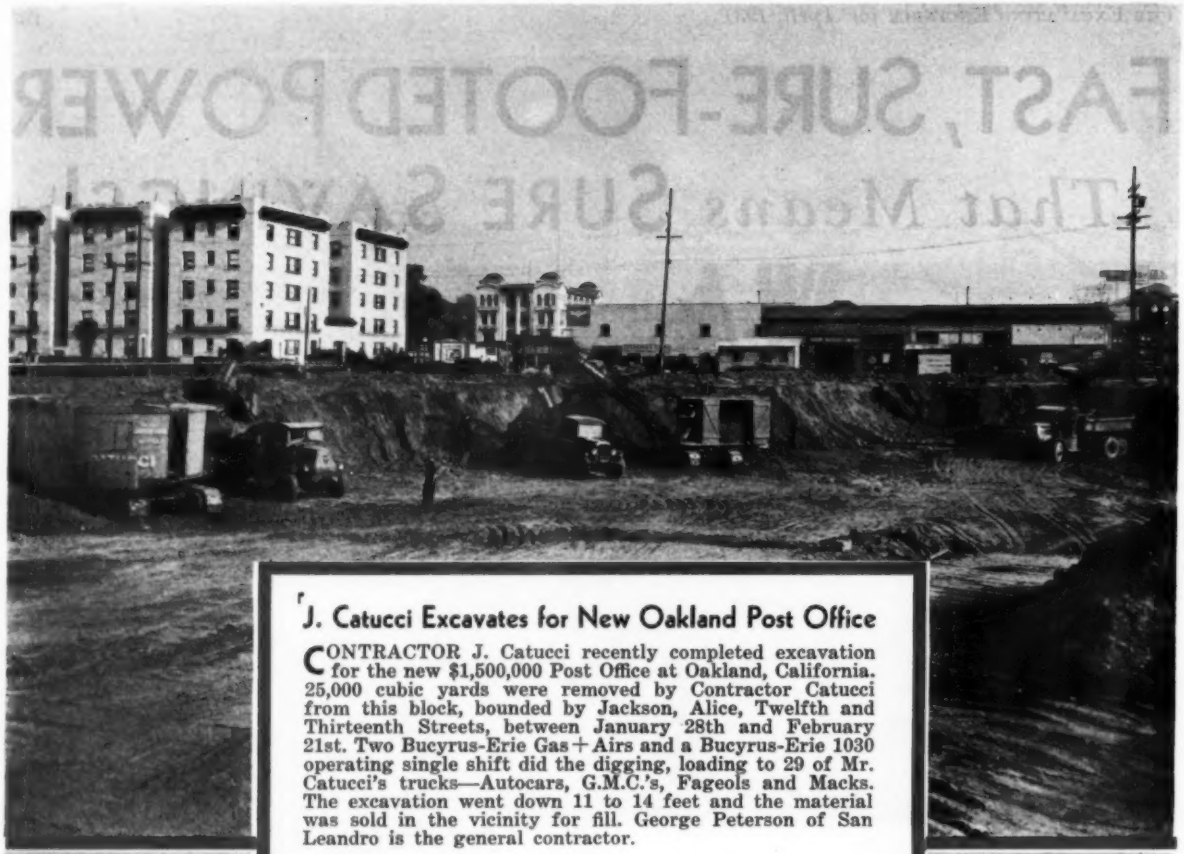
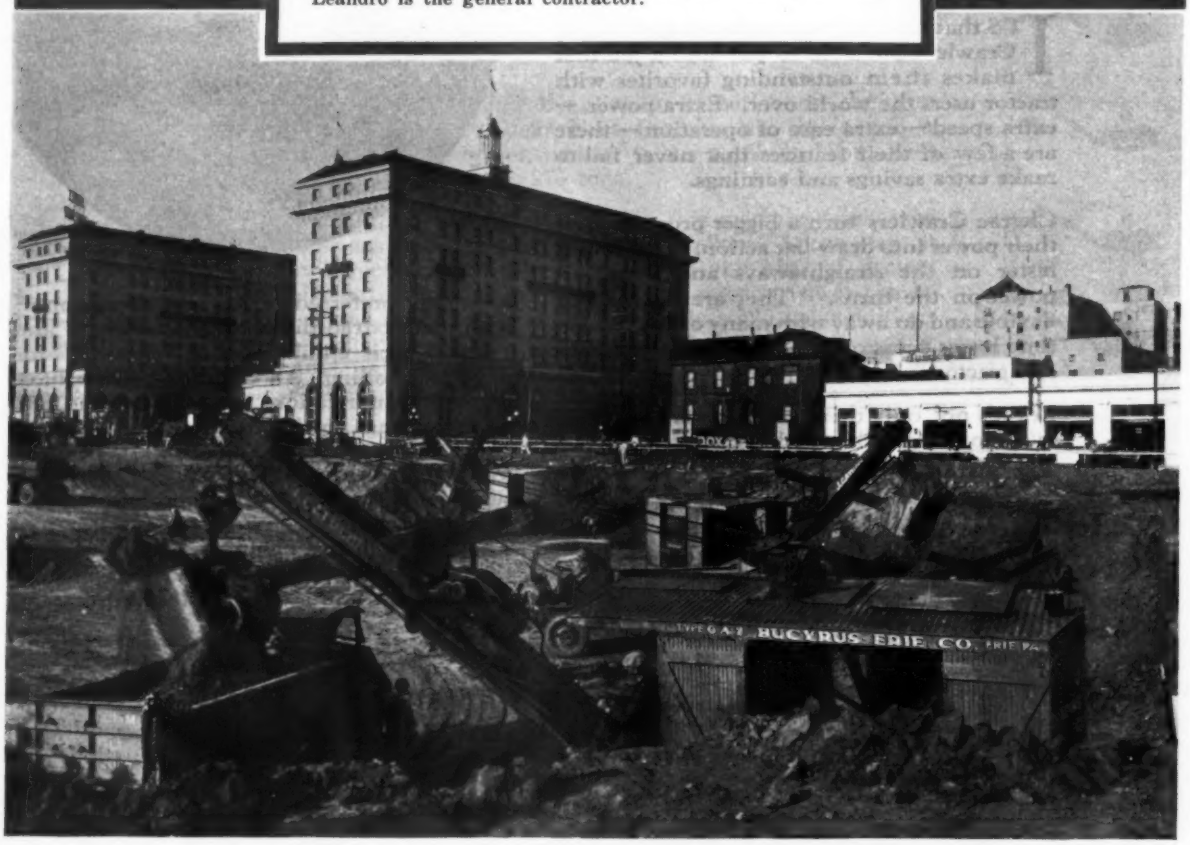


J. Catucci Excavates for New Oakland Post Office

CONTRACTOR J. Catucci recently completed excavation for the new $1,500,000 Post Office at Oakland, California. 25,000 cubic yards were removed by Contractor Catucci from this block, bounded by Jackson, Alice, Twelfth and Thirteenth Streets, between January 28th and February 21st. Two Bucyrus-Erie Gas+Airs and a Bucyrus-Erie 1030 operating single shift did the digging, loading to 29 of Mr. Catucci's trucks—Autocars, G.M.C.'s, Fageols and Macks. The excavation went down 11 to 14 feet and the material was sold in the vicinity for fill. George Peterson of San Leandro is the general contractor.



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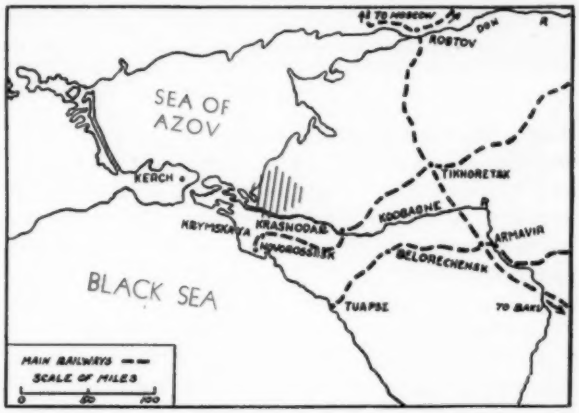


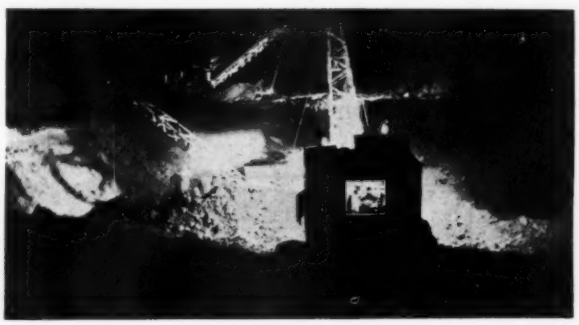
Diesel Excavators Reclaim Farm Lands on Shores of Azov Sea

Russian Trust, Plavstroy, uses four Bucyrus - Eries to excavate drainage canal system in fertile Krasnodar neighborhood

ON THE northeast shore of the Black Sea—38½ degrees longitude and 45 degrees latitude—is the town of Krasnodar (formerly Ekaterinodar). The district around Krasnodar is called Koobagne and belongs to the so-called Northern Caucasia. It is low land and dotted by numerous lakes, ponds and marshes.

The rivers coming down from the Caucasian mountains to this district take a very intricate and winding course as they near the Azov Sea. The soil is rich and considered exceptionally well suited for rice, maize and wheat. The top portion of this soil is black dirt from one-half to three-quarter meters (1 foot 8 inches to 2 feet 6 inches) deep. At a depth of 1½ to 2 meters there is a layer of clay intermixed with sand, moderately sticky, which has a tendency to retain and hold up the moisture. In the Spring large areas of the land are covered with water and due to the undulating nature of the country the water often remains until the beginning of summer making it impossible to plow and till large areas of this fertile country.

From time immemorial the local population has tried to control the flood waters of their rivers and almost every stream is banked with some sort or other of levees. However, this work was done in a haphazard manner and crop failures, due to the



On the night shifts the work was well illuminated by Kohler light plants on the machines. This view showing three of the Diesel draglines was taken without any illumination except that of the flood lights on the machines.

Starting out on the main canal. Note the accurate grade maintained by the Russian operators. It evidences the ability of these young mechanics to quickly acquire not only a knowledge of the essential principles of the machines but also skill in handling the controls.

floods, were a matter of almost yearly occurrence. In order to reclaim the waste lands of this district and eliminate the hazard to agriculture due to the overflowing rivers, the Russian Government has planned and is constructing an extensive system of canals to safely carry off the spring high water and later on to furnish irrigation where needed. Zernotrest (Grain trust), a division of the U. S. S. R. Department of Agriculture, organized for the purpose of handling this work a separate body called "Plavstroy" and the flood control work in the Koobagne district is in charge of this organization. Their preliminary plans call for the excavation of about 12,000,000 cubic meters (15,694,800 cu. yards).

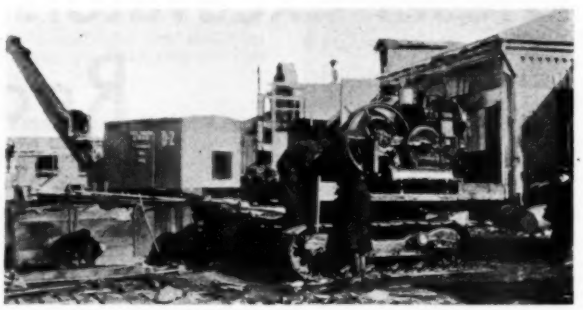
Excavating handled by four Bucyrus-Erie Diesels

The work is being carried on by four Bucyrus-Erie machines, three of them Type 1030 Diesel-driven draglines with 35 foot boom and three-quarter yard buckets and one of them a D-2 Diesel driven shovel with 26 foot boom and 1 cubic yard dipper. All four machines are powered with Atlas Imperial Diesel engines. Previous to the arrival of these machines from the States the main canal was started and a small part excavated by hand labor. With the arrival of the machines in January 1930 hand labor excavation was abandoned except for the center section of the canal which, on the wide main canal, in order to facilitate the progress of the work, is excavated by hand in order to reduce rehandling of the spoil piles by the draglines.

Main canal 111½ feet wide

The canals must be dug very wide and rather shallow on account of the low elevation of the land, the main canal being 34 meters wide (111½ feet) at the bottom and a little over two meters deep (6½ feet).

The work of erecting the machines when they arrived at Krasnodar was handled by students of



Erecting the machines in the yard of the Russian Technical School at Krasnodar

a technical training school there under the supervision of Bucyrus-Erie erector G. A. Johnson. During the erection a number of students were trained as operators and one of them, Mr. Vanderbarow, was placed in charge of all four excavators. After the machines had been erected in the yard of the school they were moved, for about 15 miles to the site of the work, part of the way under their own power and part way drawn by Caterpillar tractors.

At the left is shown one of the old river embankments common in the district but ineffectual to properly protect the surrounding fertile fields. The center view shows a completed section of the main canal excavated by hand labor. The pillars left standing in the center of the canal show the original ground surface. At the right we see a section of the main canal partially dug by hand labor before the arrival of the power excavators.

Mr. Johnson has a warm word of praise for executives in charge and for the operators, to whom assisted by his interpreter, Mr. Rubinovitch, he was able to transmit a considerable amount of technical knowledge.

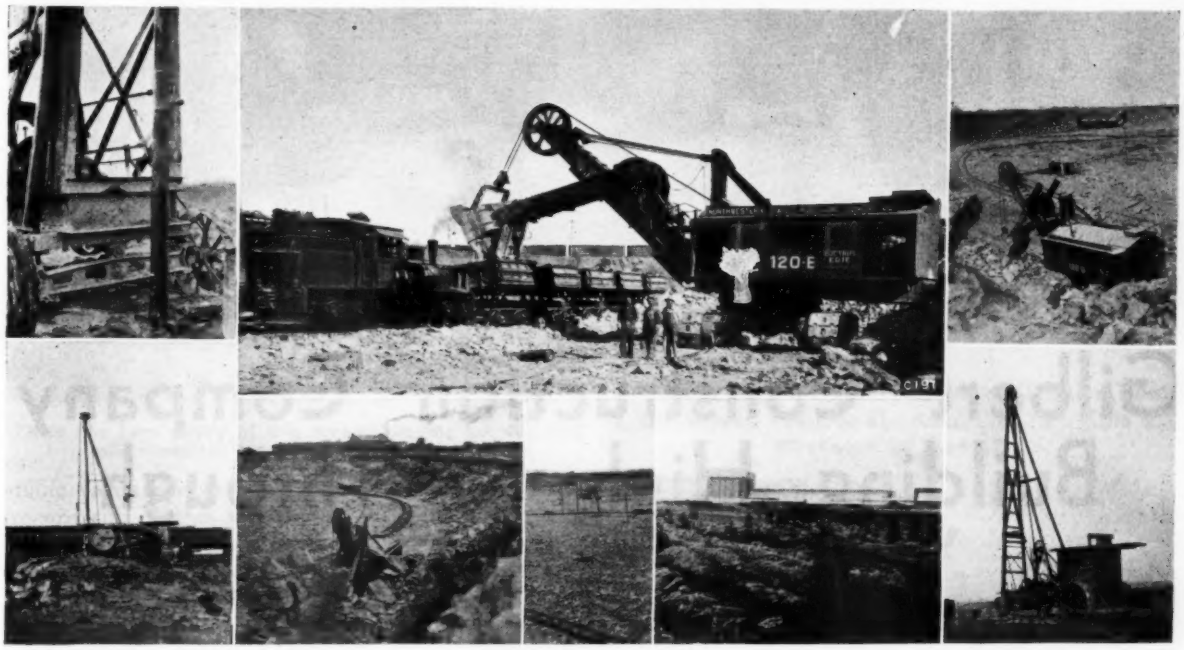
Machines halve hand labor costs

Preliminary estimates indicate that the cost of digging with the machines is just about half the cost of excavating with hand labor. The machines are worked three shifts of eight hours each and rapid progress is being made.

It is fortunate that at the head of Plavstroy is a very capable man of dynamic energy, D. P. Zhloba. This gentleman is well known throughout Russia, having been a prominent revolutionary leader in the war against bands of "whites" and "greens." Able assistance in carrying out the project is also given by Professor Shumakov and Engineer-in-charge Loushnikoff.

Three of the Russian operators with Bucyrus-Erie Erector Johnson (with the hat) and Interpreter Rubinovitch (center) before one of the clay walled houses of Krasnodar.

Northwestern States Portland Cement Company



The above illustrations present a pictorial story of the operations of the Northwestern States Portland Cement Company at Mason City, Iowa. Producing 7,500 barrels of cement a day, this plant is one of the largest in the Northwest. In the quarry a Bucyrus-Erie 120-B electric 4-yard shovel, which replaced two old railroad-type machines, supplies the mill's requirements for stone, loading 2,000 tons and over per 10-hour shift. Two Lima Shay-geared standard gauge locomotives haul trains of 10-yard Westerns from shovel to plant. Loomis and Sanderson are both represented in the electric drilling equipment, which puts down holes for blasting with 40% dynamite.

Northwestern States Portland Cement has a second mill at Gilmore City, Iowa, where a Bucyrus-Erie 70 railroad-type shovel supplies the plant with stone for a production of 1,500 barrels a day.

Hanford McNider, President of the company, is not only well known to the cement industry, but also is, at present, our country's representative to Canada. B. A. McDonald is Assistant to the President, F. E. Smith is Superintendent at the Mason City plant, H. M. Hanson is Assistant Superintendent. George Sharpe is Quarry Foreman, and Martin Peterson operates the 120-B.

Here is the entire dirt moving crew—superintendent, road inspector, shovel operator, oiler, drivers of the four Indianas, water-boy and two laborers working on bank clean up.

Gilbert Construction Company Building Highway Through West Virginia Mountains

70% rock in the 90,000 cubic yards of excavation on the four mile section of Seneca Trail

GILBERT Construction Company, Incorporated of Fairview, West Virginia, was organized in 1923, incorporated in 1926, and has built approximately 85 miles of highway in West Virginia, also many bridges, concrete structures and paving. Among their recently completed jobs were fourteen miles of grading, draining and surfacing in Hardy County and seven miles of grading, draining and surfacing in Raleigh County, West Virginia. L. S. Coleman is President of the organization, E. Vecellio, Vice-President and R. B. Gay, Secretary and Treasurer.

On July 15th last year they started a heavy contract on the Seneca Trail, West Virginia Route No. 5, between the top of Allegheny Mountain and the town of Harman. The four mile stretch involves excavation of about 90,000 cubic yards for grading and draining; approximately 70% of this is solid rock. The contract calls for completion of the work by October 1, 1931. With the work 75% completed when winter set in, the Gilbert Construction Company decided to shut down for three months during the extreme cold weather which hits this mountain country lying 3,200 feet above sea level. Even with

this shut down it is safe to say that the contract will be completed about the middle of May this year or approximately four and one-half months ahead of the dead line.

Drilling and blasting, of course, are an important part of the activities in this heavy rock work. Drilling is handled with Ingersoll-Rand Jackhamer using 7/8 inch steel. Experience has demonstrated that on their work it does not pay to attempt to drill deeper than 20 feet with this size steel. The depth in spacing of the holes varies according to the cuts and material encountered. A hard socg air sharpening machine is used to sharpen the four-way bits. Union Explosive 60% dynamite and also F. F. F. black powder is used for blasting.

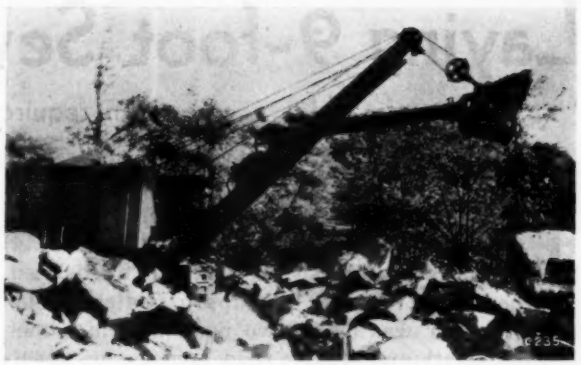
Gas+Air averages approximately 600 yds. per 10 hour shift in this heavy digging

For loading a Bucyrus-Erie Gas+Air 1¼-yard shovel is used and has averaged approximately 600

There has been plenty of this sort of digging on this four mile mountain section of the Seneca Trail.

cubic yards per shift of 10 hours. The record run of this machine on this job for the 1930 season was a total of 4,500 cubic yards in three and one-half shifts in material approximately 60% rock. The machine is equipped with a Waukesha engine which burns on an average of about sixty-five gallons of gasoline per shift.

When we asked Secretary-Treasurer R. B. Gay what he thought about the Gas+Air he replied: "This has been our third Gas+Air and like this one better than any of the others. We like the shovel in every respect. It does all that we could expect any shovel to do and the up-keep is very, very light. This machine came in new on this job and the cost of up-keep during the four months we have owned



The rock is hard and scatters well under the force of the dynamite.

it has been so small that it is hardly worth mentioning."

Hauling with Indiana trucks on pneumatic tires

For hauling, Indiana 2½-ton hydraulic dump trucks owned by the Gilbert Construction Company, are used. The average length of haul is approximately 500 feet. Pneumatic tires are used and Mr. Gay tells us that they would not attempt to use any other type of tire. Dumps are leveled by hand.

The width of the grade required is 26 feet, ditch is specified as .8 feet from crown of road to the bottom of the ditch. The average cut is 12 feet, with the maximum at 35. The deepest fills on the job run around 30 feet.

Although this four miles of road is mountain work there has been very little side hill work—about 2000 feet in all. The rest of the contract has been through cuts and fills. A Galion grader is used on the job for finishing and is drawn by a Caterpillar tractor.

When completed this four miles will finish Route 5, the Seneca Trail, to Harman, West Virginia and

(Continued on Page 179)

Just a sample of the type of digging through which Operator Lanford on the Gas+Air averaged 600 cubic yards per 10 hour shift. To superintendent P. L. Gay (in the center of the picture with a laborer on either side of him) goes the credit for syncronizing the various operations, equipment and men to make this record possible.

Laying 9-foot Sewer in Kansas City

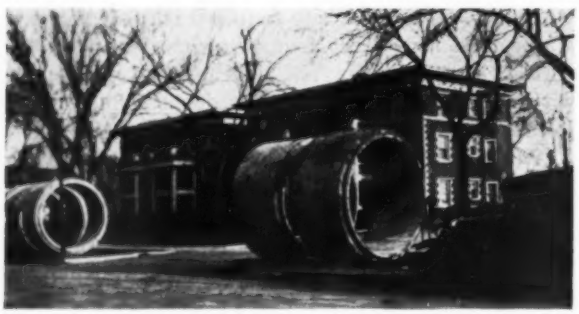
Heavy excavation required to trench for giant pipe

By Pearl H. Patrick

TO DRAIN the excess water which sometimes floods a portion of Kansas City, a giant sewer to empty into Brush Creek was laid this past summer. The contract for approximately 4,800 feet of sewer was let in two portions which met at Forty-sixth and Gilham road. One section, 2,440 feet long, leads through a park and was handled by the Torson Construction Company, Kansas City contractors, who also have offices in Long Branch, California. The other section through a paved and busy street was laid by the Boyle Construction Company of Kansas City.

Shovel digs to depth of twenty feet

On the latter section, one block of the street at a time was closed to traffic to permit excavating and placing the mammoth pipe, 9 feet in diameter,



On the Boyle section, pipe was hauled in and stored till needed on the turf between sidewalk and curb.

9 inches thick, 5 feet in length and each weighing 9 tons. Mr. Boyle handled the larger part of the excavation with his Bucyrus-Erie Type B sewer shovel, equipped with long handles which enabled it to dig to a depth of 20 feet. Auxiliary equipment on the job consisted of a Byers-Bear Cat Crane, P & H crane, several trucks and a Caterpillar tractor.

For much of the distance the trench was 24 feet deep. There was considerable limestone rock to be excavated, also paving to be removed. The Bucyrus-Erie took care of the paving excavation along with the dirt, but it was necessary to blast the limestone in the lower part of the trench. Bracing was necessary to hold the dirt in the sides, and caving mud made the work heavy digging for the shovel.

Caterpillar packs backfill into place

The greater portion of the dirt was loaded by the shovel directly to trucks and hauled to the backfill. A Caterpillar tractor tamped the backfill, making repeated trips back and forth to pack it solidly into place.

The Boyle Construction Company used this Bucyrus-Erie sewer shovel to excavate trench and place the 9-ton pipe.

The heavy pipe was manufactured in North Kansas City and hauled to the job, where it was stored on the parking between the curb stone and sidewalk. As the excavating operations came close it was moved over conveniently close to the line of excavation by one of the cranes. As soon as sufficient excavation was out of the way to permit placing of pipe, the Bucyrus-Erie reached around, picked up a section, and laid it in place.

Smaller charges but more of them for blasting

On the Torson part of the job through the park, the pipes were manufactured right along the line of excavation. Here excavation was handled with a Link-Belt crane, which also handled the pipe. The ditch in this section averaged only 12 feet deep,

(Continued on Page 202)

The Torson Construction Company cast the 9-foot sewer pipe for their section right on the job. The Koehring 10-S Heavy Duty mixer in the foreground keeps the crew handling the forms on the jump.

Do you play golf? If so, you'll long to send your ball flying true over these rolling fairways to the well-kept greens. Emil Block, Superintendent of the Golf Course, appears in the center view.

Shovel Builds Golf Course

Paul Smith's, famous Adirondack Mountain resort, builds new golf course with aid of Bucyrus-Erie Gas+Air shovel.

EVERYONE who has visited the Adirondack Mountains in New York State has heard of Paul Smith's, N. Y.

Paul Smith's Hotel is located on Lower St. Regis Lake. It was founded by Paul Smith in 1859. The Hotel Company was formed in 1890 and the property now comprises 30,000 acres of land, 10 lakes, 23 miles of navigable waterway. Palatial camps have been built by the "city people" on the shores of the St. Regis and Osgood Chain of Lakes. Ex-President Coolidge, during his stay in the Adirondacks in the summer of 1926, occupied White Pine Camp on Osgood Lake, his executive office being one of the hotel cottages at Paul Smith's. Sports include tennis, golf, riding, fishing, swimming, and dancing.

Donald Finlayson and the Bucyrus-Erie Gas+Air kept the teams hustling in this borrow pit which furnished material for fills on the golf course.

The Paul Smith's Electric Light & Power Company is affiliated with the Paul Smith's Hotel Company, and supplies power to the towns of Lake Placid, Saranac Lake, Tupper Lake, Ausable Forks, Lyon Mountain, Bloomingdale, Gabriels, Paul Smith's Bay Pond, Lake Clear, Saranac Inn, Loon Lake and Kushaqua.

Paul Smith's is self-contained, having its own post office, store, telephone exchange, telegraph, meat market, saw mill, railroads, etc. The old hotel, which was of wooden structure and accommodated approximately 300 guests, recently burned completely. It undoubtedly will be replaced with a fireproof structure.

Phelps Smith is president and treasurer of both companies.

Plenty of digging and stumping to complete this picturesque course

A Bucyrus-Erie Gas+Air shovel has played an important part in the construction of a new 18-hole golf course, which will be completed in 1931. This course is 6,590 yards long. In the construction of this course, it was necessary to dig 54,000 stumps and trees. Five acres of swamp had to be filled. It was also necessary to make cuts directly through the hills. On several of the fairways, it was necessary to fill and sod over the rocks. There are six rustic bridges on the course—one bridge 15 feet

(Continued on Page 201)

In the old days this graceful stage coach carried the guests from the railroad station to Paul Smith's Hotel.

Dredging for Beauharnois Canal

ON the opposite page is reproduced an excellent aerial photograph by Campagnie Aerienne Franco Canadienne of Montreal, showing the hydraulic dredge R. W. Sweezey, owned and operated by the Beauharnois Construction Company, at work on the Beauharnois Canal.

The canal brings the water at the level of Lake St. Francis, on which the entrance lies close to Valleyfield, to Lake St. Louis near Beauharnois where a single stage power plant is being built and the total drop of 83 feet between the two lakes will be fully utilized. The canal will be about 15 miles long and 3,000 feet wide. The ultimate potential capacity of the development is 2,000,000 h. p. 500,000 h. p. must be made available by 1938, of which 200,000 h. p. will be ready for distribution by October 1, 1932. The initial 200,000 h. p. development will require the removal of about 30,000,000 cubic yards of material with a total of about 52,000,000 cubic yards for the 500,000 h. p. output.

The navigation facilities of the river will be improved by a ship channel 27 feet deep by 300 feet wide, which is now being excavated in the bed of the canal near the north dyke. This channel will ultimately be made 600 feet wide, upon the completion of which the Canadian Government can install the necessary locks adjacent to the power house to open the new channel for navigation. This channel will by-pass the Soulanges Section of the river which contains numerous rapids and is not suitable for deep water navigation. The channel will provide one of the major links in the deep waterways development, leaving the section at the Lachine rapids near Montreal as the only remaining canalization project in the wholly Canadian section of the river.

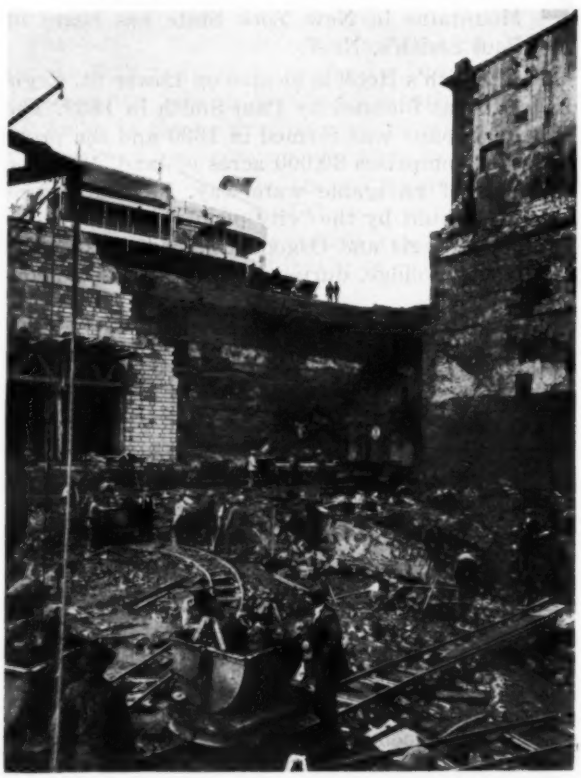
The 26-inch electric hydraulic dredge was designed by the Bucyrus-Erie Company. The complete machinery was shipped from its South Milwaukee Plant. The hull and house were built by Canadian Vickers, Ltd., of Montreal, and the electrical equipment by the Canadian General Electric Company. The dredge was completely assembled by the Beauharnois Construction Company in a pit prepared especially for that purpose into which water was admitted to later float the dredge. The main pump is driven at speeds of from 250 to 350 r. p. m. by a direct-connected 2200 h. p. variable speed motor. The cutter is driven at a maximum speed of 22 r. p. m. by a 300 h. p. variable-speed motor through a high-efficiency Falk reduction gear. The dredge is designed to dig to a total depth of 40 feet. It started operation in 1930 and removed over 3,250,000 cubic yards during the season; over 820,000 cubic yards in one month, and over 41,000 cubic yards in one day.

A complete description of this job appeared in the August, 1930, issue of *The Excavating Engineer*. In addition to the dredge, tower excavators, draglines, and shovels are being used in excavating this project.

The complete construction is done under the supervision of F. H. Cothran, vice-president of the Beauharnois Construction Company.

The accompanying illustration is furnished through the courtesy of the Beauharnois Power Corporation, Ltd.

Digging for Dry Dock at Genoa



The above illustration shows excavating operations in construction of a large dry dock at Genoa, Italy. The S. I. L. M. Company of Rome used their old Bucyrus-Erie 20-B steamer for the digging, excavating some 20,000 cubic meters in a little over a year. Engineer Peter of the S. I. L. M. Company is enthusiastic in his comments regarding the good work done by the shovel. The new dry dock is capable of handling the largest boats.

Six Companies, Incorporated, to Build Hoover Dam

ON THEIR BID of $48,890,995.50, Six Companies, Inc. of San Francisco have been awarded the contract for building the Hoover Dam, Power House and appurtenant works such as intake towers, spillways, diversion tunnels, etc., of the Boulder Canyon Project. Estimated total cost of the project will be $109,000,000, but approximately half of this will consist of materials such as cement, steel, gates, etc., which will be purchased and furnished to the contractor by the government.

A surety bond of $5,000,000 has been posted and work will no doubt have been started before this issue is off the press. The dam must be completed in six and one-half years with a penalty of $3,000 per day for time over that limit.

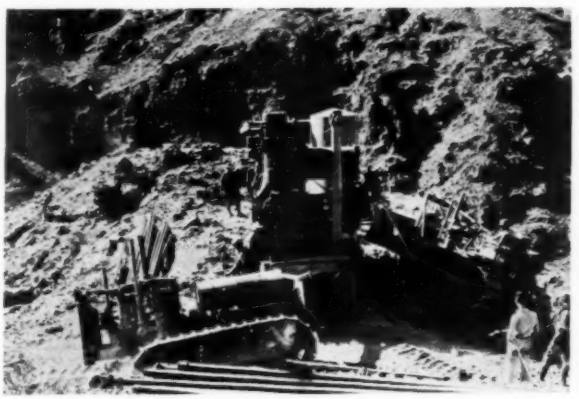
Six Companies, Inc. is composed of Utah Construction Company of Ogden, Utah; Henry J. Kaiser and W. A. Bechtel of San Francisco; McDonald & Kahn, Ltd. of San Francisco; Morris, Knudsen & Co., of Boise, Idaho; J. F. Shea Company of Portland, Oregon; and Pacific Bridge Company of Portland, Oregon.

Arundel-Atkinson Company of Baltimore and Los Angeles bid $53,893,878 on the project and

Cut on the highway from Boulder City to the dam site. Mr. Le Tourneau is using Caterpillar tractors to haul "chariots" of his own manufacture. Average loads of 10.4 yards were recently checked over an 8-hour period.

Woods Brothers of Lincoln, Nebraska bid $58,653,107.

The Utah Construction Company, one of the Six Companies, Inc. has within the past five years built four dams for the Bureau of Reclamation;



Spotting a 25-ton Sullivan air compressor with two Caterpillar Sixty's in a rock cut on the highway. 16 foot holes are drilled 10 feet apart.

Guernsey in Wyoming, Gibson in Montana, American Falls and Deadwood in Idaho. William H. Wattis, President of the Utah Construction Company and head of the Six Companies, will direct the operations for the present from his room in a San Francisco hospital where he is undergoing treatment. F. T. Crowe, Manager of the Six Companies, Inc., was, for many years, Construction Engineer for the Bureau of Reclamation.

For the Government the project is under the general supervision of Elwood Mead, Commissioner, Bureau of Reclamation, Washington, D. C., and will be supervised by the Denver office of the Bureau where R. F. Walter is Chief Engineer; S. O. Harper General Superintendent of Construction, and J. L. Savage, Chief Designing Engineer. Walker R. Young is Construction Engineer, Ralph Lowry, Assistant Construction Engineer, John C. Page, Office Engineer. At present the latter men are located at Las Vegas, Nevada, but they will move their headquarters shortly to Boulder City.

Construction of Boulder City is well under way and when completed it is expected to be the home of about 3000 people during the construction period.

The 22.7 mile section of the Los Angeles-Salt Lake Railroad from its main line to the summit (near Boulder City) is completed and now in operation. The 10¼ mile Government section of railroad from the summit to the dam site is being rushed through by The Lewis Construction Company of

(Continued on Page 202)

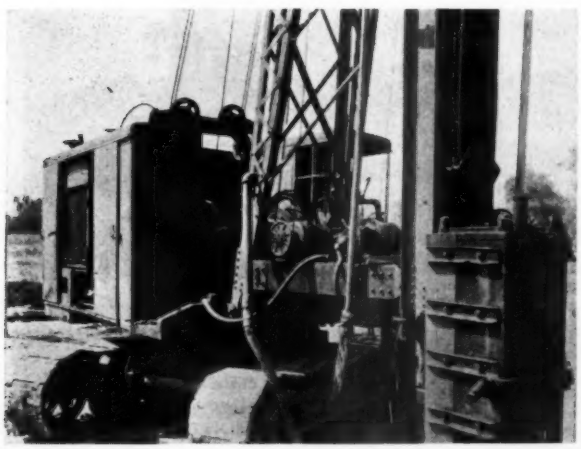
HOW Leo C. Sanders Builds Bridges

Efficient methods used by this resourceful Oklahoma City contractor make short work of pile bridge jobs

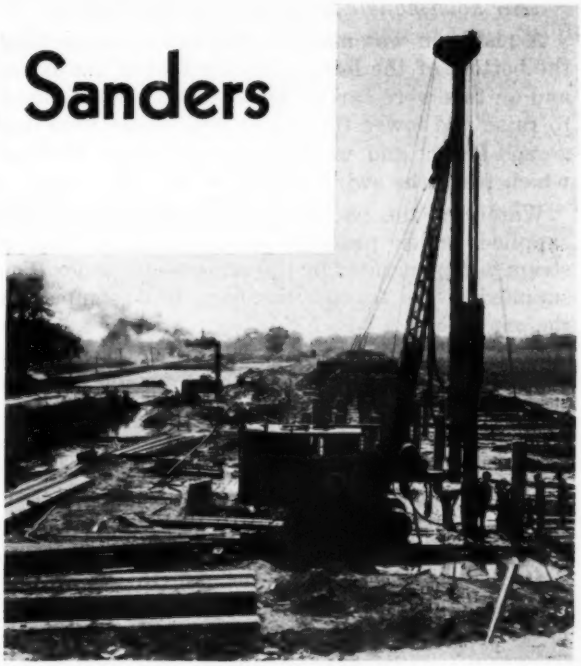
ON March 13th, 1930, Leo C. Sanders, builder, of Oklahoma City, Oklahoma, started work on a contract for three concrete pile bridges at Dale, Oklahoma, on Federal Aid Project No. 211 D & E. The job called for setting 7,000 feet of concrete piling, laying steel I-beam stringers, pouring 1,500 cubic yards of concrete flooring and building 50,000 cubic yards of earth fill to connect the bridges with the concrete pavement of Highway No. 3, which runs from Fort Smith, Arkansas, to Texola, Oklahoma, on the Texas border.

On August 3rd, 1930, Mr. Sanders had finished the job.

For handling the work he used three Bucyrus-Erie Gas+Air machines, a McKiernan-Terry hammer, Ingersoll-Rand hoists, a Rex 27-E paver, 100 h. p. Firebox steam boiler, 10 trucks, a Batcher plant and complete paving plant.



This close-up shows clearly how Mr. Sanders hooked up his pile driver to the Gas+Air. The two Ingersoll-Rand hoists for the jets were mounted on the platform formed by the connection between the leads and the base of the boom. Compressed air for their operation was furnished from the compressor unit of the Gas+Air machinery.



General view of one of the bridge jobs. Piles are being driven by the Bucyrus-Erie Gas+Air in the foreground while a second Gas+Air is being used as a dragline to complete the opposite approach. The Firebox steam boiler which supplied steam for the McKiernan-Terry hammer and pump supplying water for the jets may be seen at the left between new and old roads.

Fills handled with dragline

The fills were, on an average, about 15 feet high with a 30-foot crown and 1½ to 1 slopes. Borrows were all located on the down stream side as this work was located in an overflow section. Using two of the Gas+Airs as draglines this work was handled entirely by casting. Because of the necessity for leaving a 30-foot berm and getting all the material from a single borrow on one side of the fill a part of the dirt had to be cast three times.

Piles weighed 10,000 pounds each

The concrete piling were 16 inches square and 35 feet long, weighing 10,000 pounds each. They were cast near the place where they were to be used by Mr. Sanders' organization using a small, one-sack mixer.

For driving, one of the Gas+Air machines was equipped with leads nearly 50 feet long, as shown in the illustrations. The leads, or ways for the hammer, consisted of a standard 18-inch I-beam with a 12-inch standard channel riveted to each flange of the I. The hammer was held in place by reversing a 12-inch channel with one leg ripped off and attaching it to the hammer. The hammer already was drilled for angle iron guides, so these holes were used and a short piece of 3-inch channel was placed on the sides of the hammer to add stiffness to the guiding channels. The hammer was a No. 10-B McKiernan-Terry.

Air hoist handle water jets to direct piling

A platform was made on the braces connecting the bottom of the leads with the foot of the boom and on this were carried two small air hoists used to raise and lower the water jets. These were Ingersoll-Rands and were connected to the air line which feeds the swing engine of the Gas+Air.

Water for the two independent water jets was supplied under pressure by a 12x12x8 Duplex steam pump operated by the same steam boiler that supplied steam for the hammer. It was piped to the machine in a 3-inch line, connected by a 3-inch hose to a pipe that carried it up through the Gas+Air box girder boom. About three-quarter way up the boom this water pipe line was split with a "T" and right and left 2-inch high pressure hose 50 feet in length carried it to the top of the leads and down to the jets. With the independent control given by the two lines of hose and the two Ingersoll-Rand hoists it was easy to hold one jet higher than the other and guide the pile to the proper position as it went down.

Operator handles pulling in, placing, driving and jetting

Both steam and water lines were hooked up so that the throttle valves were placed just in front of the control levers of the Gas+Air where they could be conveniently controlled by the operator.

It was often necessary to drag in the 10,000-pound piling 50, 75 or even 100 feet from the place where they were cast, as some piles were rejected on account of seasoning cracks. This was done by the machine, the hammer being set down and the crew carrying the hoist cable out and attaching to the end of the piling. After the piling was "on the spot" the hammer and pile were picked up together, the pile set in place, the water and steam jets turned on, and down Mr. Piling would go to the exact grade required.

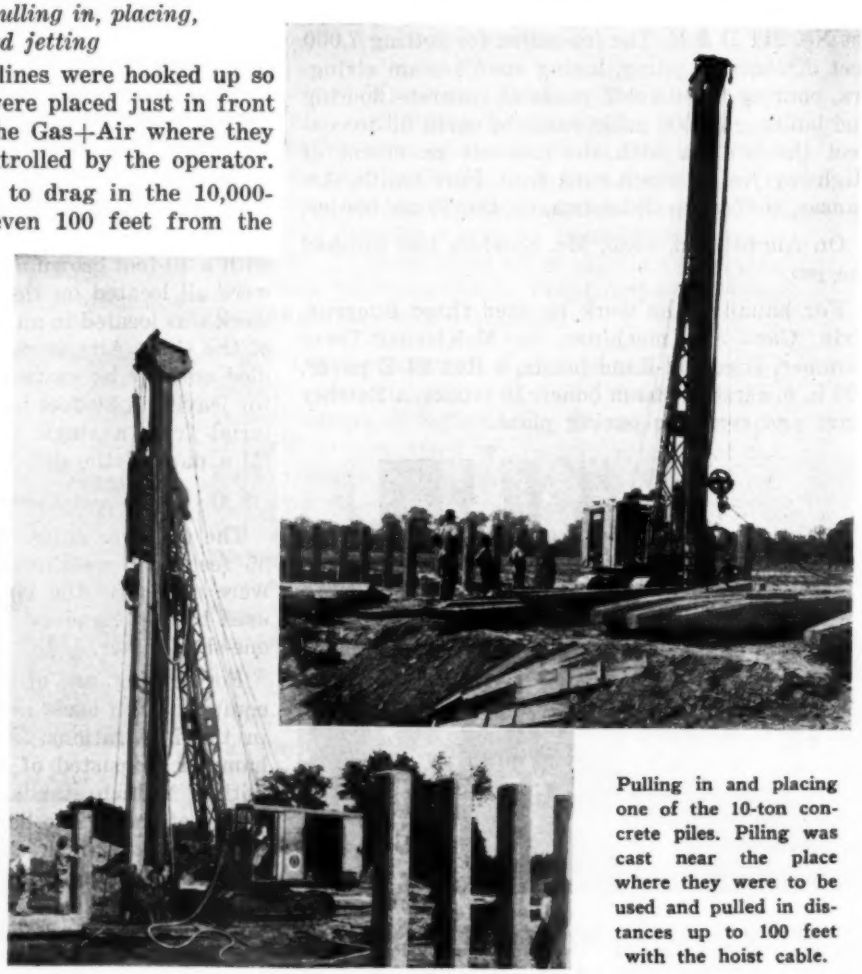
After the piling for a bridge were all in place, caps were poured in place. Then the pile driver was converted to a crane and proceeded to set the steel I-beams that served as stringers.

Bridge floors laid with paver

As soon as these were in place carpenter crews started laying the form work for the slab. When the Gas+Air finished with the stringers it was equipped with a clamshell bucket and used for changing the batcher plant that supplied the aggregate for the mixer. Temporary planking was laid across on the stringers over the forms for the slab and the Rex 27-E paver run across on this to the end of the bridge farthest from the batcher. Materials were brought from the batcher by 1-yard dump trucks over the planking and the pouring began. As the work proceeded the paver backed away from the completed concrete floor and the temporary planking was removed.

Commenting on the work of the Gas+Air, Mr. Sanders says: "You can readily see that the machine really served and deserved the name 'convertible' as it was first used as a pile driver, then as a dragline, a crane, and finally a clamshell."

Mr. Sanders supervised this work personally, being assisted by Foremen C. C. Clausen, H. Landt, E. L. Terry and E. B. Jones. Operators Jack Horton, Louis Whittington and George Crank handled the Gas+Air. Resident engineer Jim Rorabaugh was on the job for the State.



Pulling in and placing one of the 10-ton concrete piles. Piling was cast near the place where they were to be used and pulled in distances up to 100 feet with the hoist cable.

FIELD NOTES

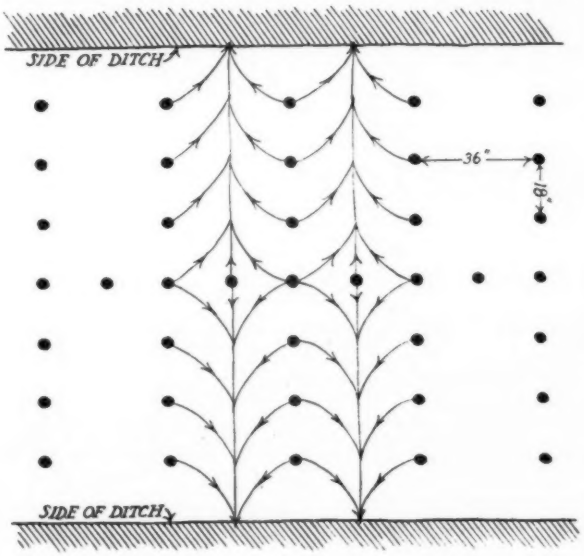
A Better Method for Blasting Wide Ditches

The "cross section" method of ditch blasting developed by A. J. McAdams of the du Pont Agricultural Extension Section may be of interest to some of our readers. Tests over a period of more than a year under a wide variety of conditions show that this system of loading moves more material per pound of dynamite in blasting wide and shallow ditches than methods heretofore used.

A close-set row of holes is loaded down the center of the ditch. Opposite every other one of these charges, a row at right angles is placed, as shown in the accompanying diagram. Suggested spacing is 18 inches on center and right angle rows, the latter being 36 inches apart. These figures, are, of course, variable depending on material to be handled.

This gives an extra heavy charge down the center line of the ditch, which helps to throw out the dirt.

As explained by Director Livingston of the du Pont Agricultural Extension Section: "As is well known, the force of an explosion is equal in all directions. When a row of charges is fired, part of the force of each separate explosion is equalized, resulting in the force of the bulk of the explosions being exerted at right angles to the row. In the case of the parallel row method, which has long been followed, some of the earth moved from one row



toward another has a tendency to fall back into the ditch, particularly if several rows are shot at one time.

"You will note from the diagram of the cross section method of loading that the rows are placed crosswise of the ditch. This means that the resultant forces going at right angles to each row would have a tendency to oppose each other, but the mere fact that we have down in the center of the ditch a row of holes wherein the charges are twice as close together as the cross rows, gives a sufficient resultant force toward the side of the ditch to give the results which we are after, namely that a great deal more dirt is cleared from the ditch."

Old Tires Conquer Gumbo

The steel rims or treads of a road grader when in gumbo of any kind are usually rendered as useless as an electric fan at the North Pole. Gumbo, however, will not stick or adhere so readily to rubber. An Iowa operator hit upon a happy and practical idea. He procured two old tires, cut and wired them to the wheels of his grader. Saved the day indeed! Made his grader go as free and easy in comparison as Ben Hur's chariot on the home stretch for the sweepstakes of the emperor's races.—*Frank W. Bentley, Jr.*

Brain and Brawn

Forty-two years ago I was one of a gang of railroad laborers shoveling earth on a new railway.

There were no steam shovels or ditch-digging machines in those days, at least not on that work. Each man filled his square-pointed No. 2 iron shovel full of earth, and then walked about a hundred feet and threw his shovel full of earth over the bank and went back for another one.

Last week I stood on a job of excavating where one man manipulated one of the most improved makes of steam shovels, so that in one hour he handled more earth than that gang of two hundred men had handled in a ten-hour day. Some short-sighted men protest that such machinery means less work and lower wages for the laborer.

"One man is doing the work of two hundred," they argue. "That one machine puts a hundred and ninety-nine men out of work."

They forget that it not only takes a small army of men to manufacture these machines but also, since excavating can be done in this improved way, thousands of new pieces of work are planned that no one dreamed of undertaking by the old pick-and-shovel method. Today railroads and automobile roads, tunnels through mountains, mammoth irrigation and drainage projects, canals and dams are used, building, or planned, all over the world to bring comfort, pleasure, wealth and work to all mankind. How very few of these great projects would give us their benefits today if we had insisted on staying in the pick-and-shovel age.

And men who study such things say we have just begun in our job of rebuilding the earth.

—*George L. Banks.*

"What yo' got in yo' mouf?" asked one colored boy of another, as they started off with their fishing poles.

"Fishin' worms," he replied.

"Why don't yo' put em in yo' pocket?"

"In there wid my lunch? Ah guess not."

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The Business Situation

LAST MONTH in these pages we pointed out that business sentiment was beginning to discover brighter prospects on the horizon. This month the same statement holds true except that there is a little more optimism than before. It is really unfortunate that some method cannot be discovered to create a definite and chartable indicator for business sentiment but so far no one has reduced it to cold figures to be reported in the same manner as are freight car loadings, steel output, building construction and so forth. We must therefore limit our statements to the fact that sentiment is a little more optimistic.

Bond prices slumped somewhat, discounting the effects of the bonus bill, but their satisfactory action since the passing of the bill is either another indication that business can see its way clearer than it could a month or two ago, or an admission that the low prices of a few weeks ago overdiscounted the difficulty that actually came about.

A turn for the better has been made by residential building, according to February figures released by F. W. Dodge Corporation. Downhill for more than two years, this type of construction, looked to by economists as the construction class to indicate a forward movement after depression, has shown the first turn with its February record.

This first reversal since 1928 is found in a total of $77,917,800 in residential contracts awarded during the month in the 37 states east of the Rockies.

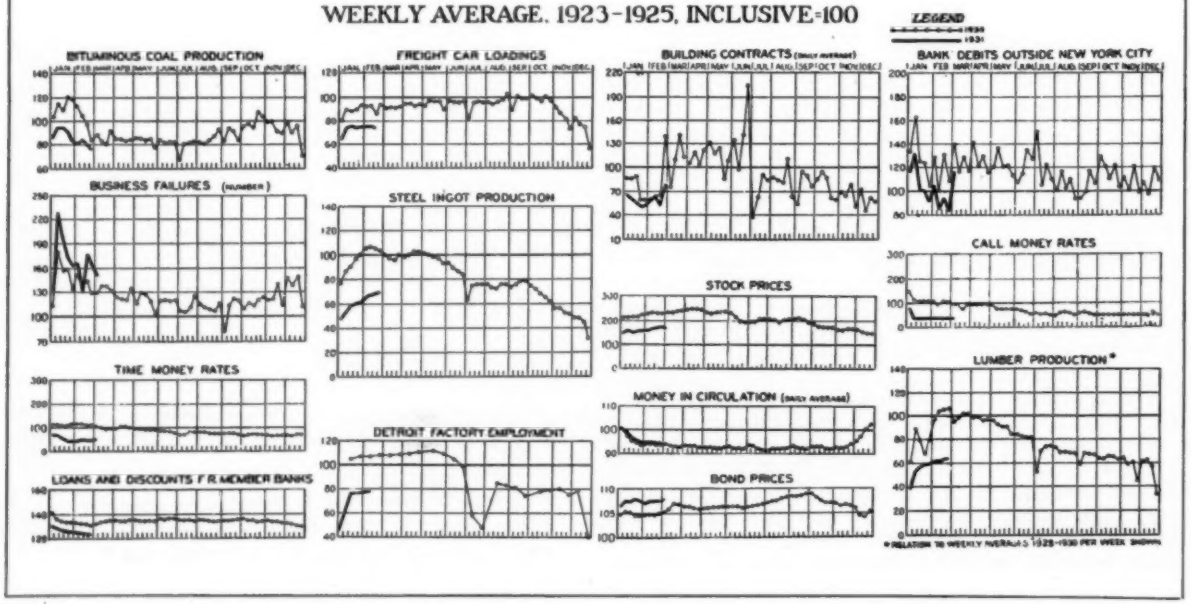
A nearly equal division is made by the three major construction totals this month, a grand total of $235,405,100 being broken into the $77,917,800 already mentioned as residential; $78,844,500 for non-residential; and $78,642,800 for public works and utilities.

Dwellings erected individually and apartments are the larger elements in the housing groups with housing developments also occupying an important position. New York City accounted principally for the gain in new apartment building during the month.

Non-residential construction which totalled $78,844,500 for the month was low when compared with the corresponding month last year.

Gains in total construction over both the previous month and February of last year were pro-

WEEKLY BUSINESS INDICATORS



duced in two of the thirteen Dodge territories. These were New England and Central Northwest territory, the latter comprising Minnesota, the Dakotas, Northern Peninsula of Michigan, and Northwest Wisconsin.

Reflection of seasonal advances of February over January were shown by gains in six additional territories.

For the two months of the current year residential building was off only $9,000,000 as compared with the same period of 1930. This was a loss of about 6 per cent and compares with a loss of almost 50 per cent for the corresponding two months of 1930 in contrast with 1929, indicating that the deflation in this type of building has been largely completed.

At the end of every depression we find that one of the factors that has brought about the return of active business has been the careful study of methods and costs followed by cost reduction brought about by the installation of the most economical methods available. Every industry, every organization active in business should be carefully studying this phase of its activity for it can only be through expert management and the use of the very latest, most efficient methods, that the competition of the coming months can be successfully met.

We should not expect a rapid recovery; it is much more likely to be a slow process—a constant though gradual rise.

Shovel is Handyman in Kansas Quarry

IN the quarry of the Consolidated Cement Corporation of Mildred, Kansas, both limestone and shale are produced for their cement plant operations. The limestone deposit averages approximately twenty-five feet in depth with the shale deposit lying directly underneath.

The limestone quarry is drilled with a No. 14 Sanderson Cyclone well drill with holes spaced ten feet with fourteen-foot burden. For primary shooting a 60% 4½-inch x 17-inch ammonia powder is used. Seemingly due to rock structure it is necessary to shoot comparatively small shots to avoid excessive vibration to residence buildings that are somewhat close to the quarry operations.

The limestone is loaded with a 78-C Bucyrus-Erie railroad-type shovel into six-yard dump cars which are hauled to crushing department by standard-gauge steam locomotives.

As the underlying shale is suitable for portland cement manufacture, this material is handled in a somewhat different method than is used in most instances, in that they are able to load directly from the shale pit to cars on quarry track as shown by accompanying illustration.

For this work, a 41-B Bucyrus-Erie caterpillar-mounted high-lift steam shovel is used. The shale being of a rather hard formation, it is necessary

Track work is saved by loading shale with Bucyrus-Erie 41-B to cars on tracks on the floor of the limestone cut.

to drill and shoot; for this jackhammers are used and 1¼-inch x 4-inch 40% ammonia powder.

After completing a cut around the quarry face, the 41-B is utilized as a track mover, throwing track over for the next cut. The shale operation is then moved over along this track which eliminates track in the shale pit.

During its spare time, the 41-B cleans up the spill along the quarry, track and other numerous jobs around the quarry, for which a machine of this type is particularly adapted.

The quarrying operations are in charge of E. L. Drury, Assistant Superintendent; Bert Hooker, Quarry Foreman and L. L. Brock, Transportation Foreman.

Building Highway Through West Virginia Mountains

(Continued from Page 169)

leaves about 30 miles of new road to be built before this highway is finished to Elkins, West Virginia which will complete the route. The Seneca Trail, noted for its beautiful scenery runs for many miles through the Alleghenys. So far the contractors on this job have not encountered any very difficult problems. The four mile section runs through very rough, thinly settled, mountain country. The rock has been hard and there has been plenty of tough digging for the shovel which it has handled very successfully. A good organization and careful supervision have kept things rolling along nicely and we forecast that the job will be nicely out of the way early in the spring.

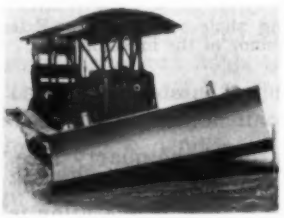
P. L. Gay, is superintendent in charge on this Gilbert Construction Company job and S. F. Lanford is operator on the Gas+Air.

EQUIPMENT YOU OUGHT TO KNOW ABOUT

La Plant-Choate Improved Backfiller

RECENT improvements of the La Plant-Choate combination Backfiller and Blade Plow for use with Caterpillar Tractors have been announced by *LaPlant-Choate Manufacturing Company, Cedar Rapids, Iowa.*

Some of the outstanding improvements on this machine are: 1. Newly designed blade pivot box which allows the blade to oscillate freely at all times, giving a full floating blade. 2. A much shorter blade which lessens the gap between those jobs where it was previously a question as to whether a bulldozer or a backfiller would be the better tool. 3. Chain adjustments, which are used to hold either end of the blade down, even to the extent of having the low end of the blade held down to cut approximately 20 inches below the track level. 4. A moldboard which has been designed with an improved roll which enables the blade to cut in with a slicing action when set at an angle, rolling the material to the side with the least bit of effort. 5. The advantageous principle of an overhanging blade on the delivery side for counteracting side draft is one of the important features. This allows the tractor to remain on safe and solid ground while delivery is being made over a bank or into a ditch. 6. The new improvements allow the blade to have 10 inches clearance from the ground when the blade is set at an angle, and 12 inches when set for bulldozing work. 7. Although the ground is rough and uneven, the blade will carry level on the mushroom shoe even when the tractor is running in ruts. These shoes are adjustable and ride on the smooth level ground in the rear of the blade, and when a smooth cut is once started it can be maintained with comparative ease. 8. The close proximity of the blade to the front of the tractor makes it possible to utilize the full power of the "Caterpillar."



For further information write LaPlant-Choate Mfg. Co., Inc., Cedar Rapids, Iowa. Mention this magazine, please.

New Four-Cubic Yard Mules

THE *Marion Steel Body Company, Marion, Ohio,* manufacturers of the Marion line of dump-body equipment, have recently acquired control of The R. J. W. Mfg. Company of Bucyrus, Ohio, manufacturers of steel mules. The acquired company has been reorganized under the name of Marion Mules, Inc., and announce a new and improved product to be known as the Marion Mule.

The new Mule, shown here, presents many outstanding improvements in construction. For motive power either steel wheels, crawlers or pneumatic tire equipment may be used and interchanged in the field without difficulty. The crawler tracks are Marion-designed and built. They are trouble-proof with the driving sprocket operating on Timken bearings. The power unit is a McCormick-Deering Model 10-20 Industrial Tractor unit. Transmission has four speeds forward, one reverse. The power unit is mounted complete in a heavily constructed chassis frame, having 7-inch side channels. The front axle is of Marion design, full-floating and oscillating. The tractor drive axle does not carry the load. An auxiliary or dead axle in the rear is fixed to the chassis supporting the load and driving wheels. The tractor drive axle connects with the dead axle through a gear reduction of 5-to-3, thus increasing the power of the unit by fifty per cent. With crawler tracks the Marion Mule has a speed of six miles per hour; steel wheels at nine miles per hour, and pneumatic tires at twelve miles per hour.

The body, 4-cubic yard capacity which may be increased to 5 cubic yards with sideboards, is gravity operated, and when in lowered position easily bulldozes the load. All machine parts of the chassis are of alloy steel or forgings, reinforced and ribbed to stand heavy going.

For further information on Marion Mules write the *Marion Steel Body Co., P. O. Box 433, Marion, Ohio.* Please mention *The Excavating Engineer.*

Bucyrus-Erie Introduces New Member of "Complete Line"

RECENTLY ANNOUNCED by Bucyrus-Erie is the 43-B, a new 1½-1¾ yard shovel-dragline-crane-clamshell built throughout to meet today's requirements for increased yardage production at lower unit costs. The manufacturer offers the choice of Diesel, gasoline, or electric power, rope or chain crowd on the shovel, regular or special extra long and wide mountings for soft ground dragline work. Simplest possible convertibility saves time and money in changing over for other types of work. Bucyrus-Erie steels and unit steel construction, ball bearings on all continuously running shafts, large oversize clutches, gears enclosed and running in oil, box girder boom, single-shaft-drive caterpillar mounting, all contribute to the extremely low maintenance costs for this machine and increase its years of serviceability. With the world's oldest

and largest manufacturers of excavating equipment behind it owners may be assured of always being able to obtain service and repair parts throughout the long lifetime of the machine.

A few other features of interest to our readers are: hoist clutches power set—all operating levers toggle in; smooth operating, oversize brakes with cooling fins; steered from operator's stand with cab in any position; double-operating chocking brakes on caterpillar mountings—controlled from operator's seat; swing brake for operating on grades; three side vision for operator—steel cab; inserted tooth dipper; only two bearings to a shaft . . . no binding of bearings; power dipper trip; self starter for engines; power boom hoist—self locking.

Write *Bucyrus-Erie Company* at *South Milwaukee, Wisconsin,* mentioning this magazine, for full information.

New Lubricant for Motors

THE *General Electric Company* has announced a new grease for ball and roller-bearing motors. This lubricant is being successfully used on ball-bearing application, with speeds as high as 25,000 r. p. m., and temperature exposures from —25 degress to 250 degrees F. However, its use is recommended only for the lubrication of motor bearings where the motors were originally grease-lubricated.

Some of the advantages claimed for the new lubricant are: (1) compounded high-grade materials, (2) maintains an operating consistency under severe conditions and wide temperature range, (3) allows complete ball and roller motion, (4) very little tendency to gum, cake or separate, (5) contains no free acid or water and will not turn rancid, (6) unusual film strength.

The new lubricant is supplied in two-ounce tubes and one-pound cans. The tube is calibrated into one-half ounces, and the cover of the one-pound can holds two ounces. This assists in measuring the amounts of grease recommended for the various bearings without weighing. Additional information may be had by writing *General Electric Company, Schenectady, New York.* Please mention this magazine.

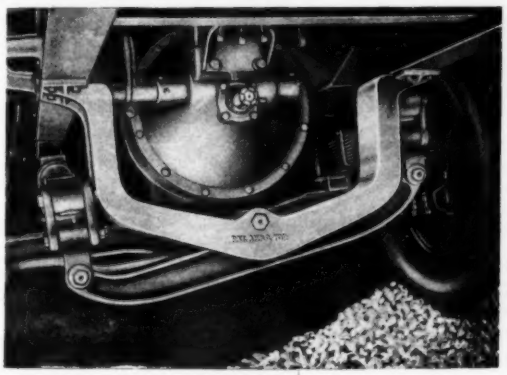
Arc Welder Equipped with Flanged Wheels

A GAS-ENGINE driven welding set equipped with flanged wheels for track service is offered by the *Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.* This "Flax-arc" welder is a 2000 ampere, single operator, self-contained unit, especially suitable for construction work beyond the reach of power lines. The model is available for service on railroad tracks or in mines. For further information regarding this welding set, write the makers.

Hug Announces New Front Spring Rocker

INTRODUCING an entirely new principle in front spring mounting design, the *Hug Company, of Highland, Illinois,* manufacturers of road building trucks and equipment, has just announced and put into production on its Roadbuilder Trucks a newly patented device known as the Hug Front Spring Rocker, designed to eliminate the undesirable features of conventional front spring suspension in road building trucks.

The front spring rocker is simple in construction and practical in operation. It is made up of an



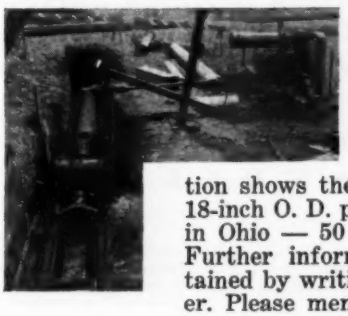
assembly consisting of a special cross member or rocker bar attached to the rear ends of the two springs by means of double-action spring shackles. The cross member is in turn connected in the center to a special U-type rocker bar equalizer, thus allowing the front axle to rock under the frame without twisting or distortion.

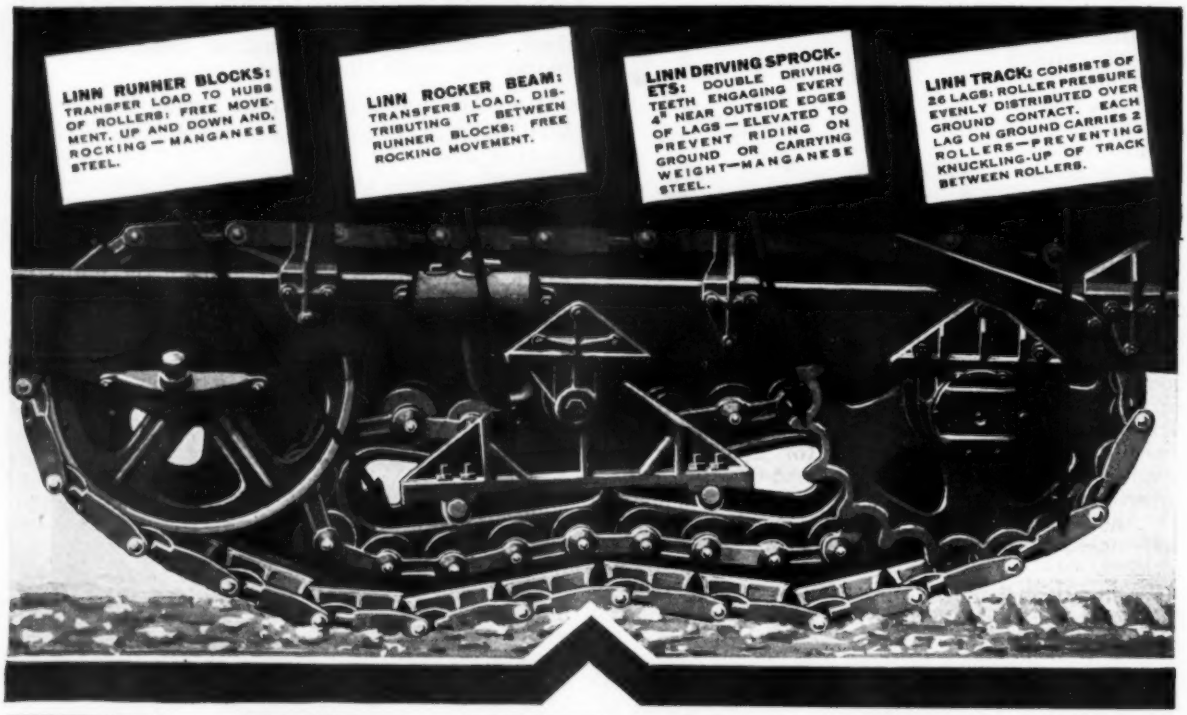
The chief advantage in use, as pointed out by Hug engineers, lies in its application to trucks operated over uneven roads and more particularly to trucks used in excavation and road building. It eliminates twisting, bending or breaking of frame rails; breaking of motor supports or hangers; or twisting of cab, radiator or hood. The extreme stresses and strains to which the conventional type of truck is subjected in road building work, with their resultant wear and tear on equipment and the subsequent loss of time for repairs, has for years been a major problem to owners using their trucks in road building and excavation work.

For additional information write the makers, mentioning this magazine.

Road Crossing Boring Machine

THE improved Young's Road Crossing Boring machine has recently been announced by *Young Engine Corporation, Canton, Ohio.* The machine has been designed to reduce pipe-line road-crossing costs. The illustration shows the machine installing 18-inch O. D. pipe under a railroad in Ohio — 50 feet in four hours. Further information may be obtained by writing the manufacturer. Please mention this magazine.




LINN RUNNER BLOCKS: TRANSFER LOAD TO HUBS OF ROLLERS; FREE MOVEMENT, UP AND DOWN AND, ROCKING — MANGANESE STEEL.
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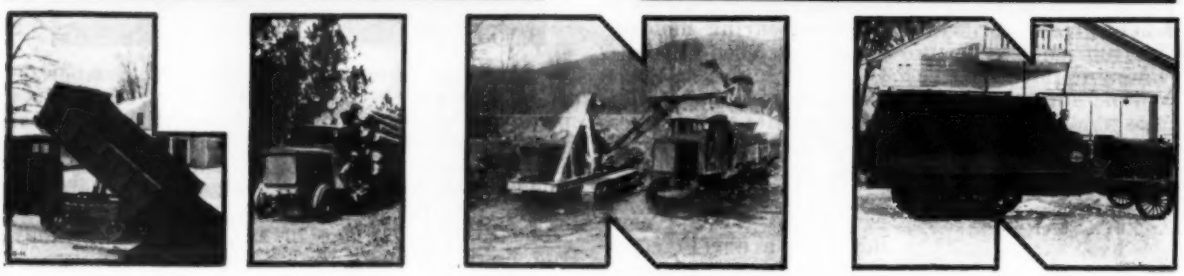

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SHOTS FROM THE FIRING LINE

Death Claims Edgar Jadwin, Engineer

Lieut.-Gen. Edgar Jadwin (age 65), chairman of the interoceanic canal board and former chief of engineers, U. S. A., suffered a stroke of apoplexy while conferring with canal engineers at Balboa, Monday, March 2nd, and died in Gorgas hospital Monday night. Gen. Jadwin was at Balboa in connection with an investigation that may lead to the construction of the Nicaragua canal or an increase in the capacity of the Panama canal.

Well known to the excavating industry, Gen. Jadwin's passing is marked by the regret of the entire industry, especially by those who have had an opportunity of associating with him.

He was born in Honesdale, Pennsylvania, in 1865. About twenty years later he was graduated from Lafayette college with high honors, and in 1890 was graduated from West Point at the head of his class. As one of the chief assistants of Gen. Goethals from 1907 to 1911 he supervised the work on the Gatun locks of the Panama canal. For the next five years he was government engineer in various districts.

During the war, Col. Jadwin, with 160,000 men under his command, laid 947 miles of railways through France, built seven miles of docks, 285 miles of barracks, 146 miles of hospital wards and countless giant warehouses. At the time of the Mississippi floods in 1927, Gen. Jadwin, accompanied by President Hoover, then Secretary of Commerce, and other members of the Flood Relief Commission, visited the stricken area and the prompt measures for emergency relief were carried out along the lines suggested by him. The present extensive work being done along the Mississippi follows plans formulated by Gen. Jadwin.

Canalization of the Ohio river was finished under Gen. Jadwin's administration. He built the Galveston sea wall and drew up plans for the development of Muscle Shoals. When he retired from his position as Chief Engineer in August, 1929, he was raised to the rank of Lieutenant-General.

Excavating men, the world over, mourn his passing.

Appointments Announced by Bureau of Mines

The appointment of Dr. Everett P. Partridge, of Ann Arbor, Michigan, as supervising engineer of the Non-Metallic Minerals Experiment Station at New Brunswick, N. J., and of Harold W. Robbins, of Chicago, as Editor, is announced by Scott Turner, Director of the United States Bureau of Mines, Department of Commerce.

Dr. Partridge, who is associate editor of Industrial and Engineering Chemistry, succeeds Dr. H. H. Storch, who will take charge of the Physical Chemistry Section at the Pittsburgh, Pa., Experiment Station of the Bureau of Mines. The chief project now in progress at the Non-Metallic Minerals Experiment Station is a study of methods for producing potash salts from such minerals as polyhalite found in New Mexico and Texas, leucite in Wyoming, and greensand in New Jersey. Considerable fundamental work has been done on this project by Dr. Storch and his associates during the past two years. This work is to be continued and carried into a small-scale chemical engineering stage under the direction of Dr. Partridge.

Dr. Partridge received his undergraduate training in chemical engineering at Syracuse University, graduating with the degree of B. S. in chemical engineering in 1925. At that time he was appointed to the Detroit Edison Fellowship in chemical engineering at the University of Michigan, which he held for three years. He received an M.S.E. degree from the University of Michigan in 1926 and a Ph. D. degree from the same institution in 1928.

Mr. Robbins' duties as Editor involve editorial supervision of the publications of the Bureau of Mines, which publishes annually several hundred reports. He succeeds Frederick W. Horton, transferred to the bureau's Mining Division for the conduct of research in the mining of non-metallic minerals.

Mr. Robbins holds the degree of M.E. from Cornell University. For the past fifteen years he has been a member of the staff of the department of metallurgy and inspection of the Illinois Steel Company, Chicago. During this period he has been engaged in research and development engineering, especially in electrical, physical mathmatical, and designing work. During the World War, he was with the central district headquarters of the United States Shipping Board in Chicago. He was at one time engaged in editorial duties with the American Technical Society of Chicago, publishers of technical textbooks and treatises.

Foreign Construction Division Added to Department of Commerce

A Foreign Construction Division has been established in the Bureau of Foreign and Domestic Commerce. For some time it has been felt that one of the obstacles to increased American participation in foreign construction projects was the lack of a unified clearing house in the Bureau organization through which planners, constructors and suppliers in the United States could form contacts with architects, engineers, builders and consumers overseas. This contact the Bureau now hopes to establish by co-ordinating and bringing into one group the foreign construction units of the Bureau at Washington, and by clearing through this one office the very important contributions of the foreign field staff concerning construction abroad. The Division will endeavor to serve American exporters of construction materials, as well as architects, engineers and builders.

Wage Cutting and "Below Cost" Bidding Condemned at Annual Convention of the New York State Highway Chapter, A. G. C.

By D. E. WHITE

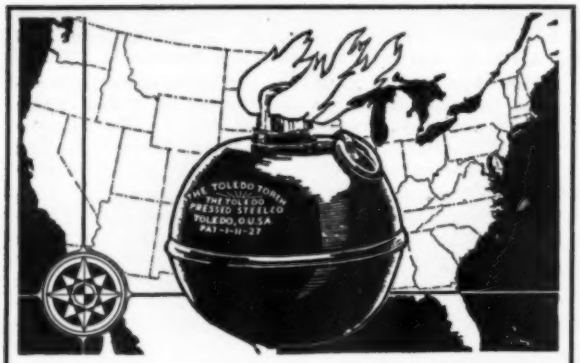
The New York State Highway chapter of the Associated General Contractors of America held their annual meeting in the Hotel Syracuse, Syracuse, N. Y., on March 3, 4 and 5.

The election of officers took place at this meeting and Richard Hopkins of Albany was elected President, succeeding John H. Bolton of Watkins Glen. George W. Chambers, Rochester, N. Y., was elected Vice-President; Samuel B. Easton, Secretary-Treasurer, and Bart J. Ruddy, Fay McChesney, Major Irving V. A. Huie, Olney N. Foote, and Joseph B. Crampton were elected Directors. Major Huie presented to Retiring President Bolton a beautiful watch as a testimonial of the New York State Chapter.

The exploitation of labor by wage cutting during the depression was condemned at the convention. It was also voted to oppose the proposed changes in the lien law, and it was decided that support would be given for legislation providing for pre-qualification of bidders on all state highway work, deposit of all bidders' certified checks to the credit of the state, and furnishing by all prospective bidders of a duly-verified financial statement.

Col. Frederick Stuart Greene, Superintendent of the State Department of Public Works, asked that bidders refrain from taking work at the lowest possible figure, simply to get the work and without the possibility of making a profit. He claimed that engineers' estimates allowed for a decent profit but that the bidding for the past few years has been so low that contractors could not make any profit on the work which they were awarded. Col. Greene was accompanied to the meeting by Capt. Arthur W. Brandt, Commissioner of Highways, and Ralph D. Hayes, Commissioner of Waterways.

The speakers at the dinner included Capt. Brandt, Senator George R. Fearon, Col. Willard T. Chevalier, publishing director of the Engineering News-Record; Strickland Gillilan, National Press Club. Fred B. Davis was toastmaster.



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Shots From the Firing Line — Continued

Foreign

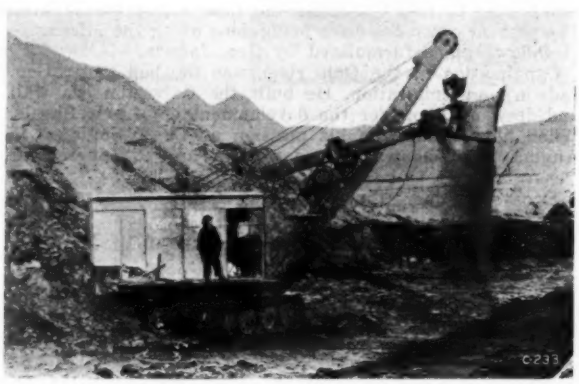
Uruguay

By WALTER PORTH

The Anglo Scottish Construction Company is using a Ruston-Bucyrus No. 10 (shown above) and several Type 1030 draglines on their railroad construction job in Uruguay. The lower view shows the crews taking "a bit of tay" in the cool shade of a roadside tree.

Canada

Saskatchewan



In February we published a complete story of the operations of **Truax-Traer Coal Company** at St. David, Illinois. The above picture, which comes to us through the courtesy of General Manager E. W. Garner, was taken at their mine at Estavan, and shows the Bucyrus-Erie 42-B electric shovel with 1½ yard dipper which loads the coal on this operation. The machine is equipped with General Electric motors and Roebling rope.

Quebec Notes

In keeping with previous years, the Province of Quebec continued its steady progress in road construction during 1930. The Provincial Roads Department is carrying out a program of widening main highways, correcting alignments and grades and of permanent paving. In the Province there are 33,040 miles of rural roads and 13,652 miles of improved roads. For the past ten years, road construction has av-

CROSS YOUR FINGERS
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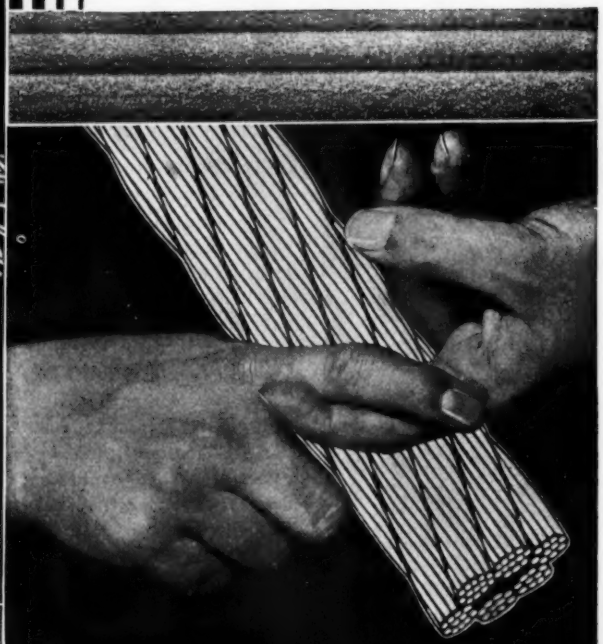

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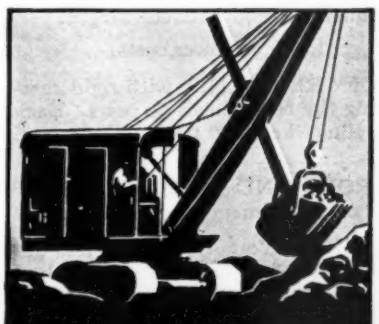
80 DAYS ON A LORAIN 75A

. . and no broken wires yet

An Indiana Stone Company reports 30 days maximum service with ordinary wire rope. Compare this with Tru-Lay Preformed Wire Rope—80 days—an *increase* of 166%. And at the time this report was received Tru-Lay was still doing service . . . going strong . . . and not a wire broken!



A SIMPLE EXPLANATION Why TRU-LAY Outwears

Cross your fingers and note the pressure—move your fingers and note the rubbing action. In Tru-Lay Preformed Wire Rope this internal stress and excessive rubbing action is eliminated. Strands and wires are shaped to fit perfectly together. They lie normally in position as when you hold your two hands together as shown above.

Internal stress in ordinary wire rope is the reason for seizing the ends. Even when seized close to the end, the strands and wires brush out. Tru-Lay, when cut, does not require seizing. Strands and wires lie in place. This is evidence that preforming eliminates internal stress.

Let us show you that what Tru-Lay does for others Tru-Lay will do for you . . . namely, 30% to 300% increased service in wire rope, depending on the nature of the service and character of equipment.

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Shots From the Firing Line — *Continued*

eraged 1,000 miles annually. The total length of the main highway system is 5,394 miles, of which 5,066 miles is entirely completed, 218 miles under construction and 110 miles yet to be improved. The resurfacing program initiated two years ago is proceeding normally. That program calls for the paving of 900 miles of highways in the vicinity of cities and will involve an expenditure of $17,000,000.

New England Notes

By E. J. O'CONNOR

The accompanying picture shows Operator **Meli Manvizo** (better known as "Melio") making the last cut on the excavation for the Boston City Hospital job for **Marinucci Brothers.** The machine is a Bucyrus-Erie B-2 steamer. 8000 yards of material were excavated on this job in ten days' time under the skillful direction of M. J. Verrochi.

Country Cousin to City Boy—Your girl's dress reminds me of a barbed wire fence.

City Boy—Why so?

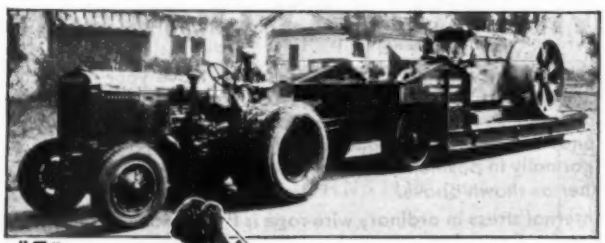
Country Cousin—Wal, it seems to protect the property without obstructing the view.

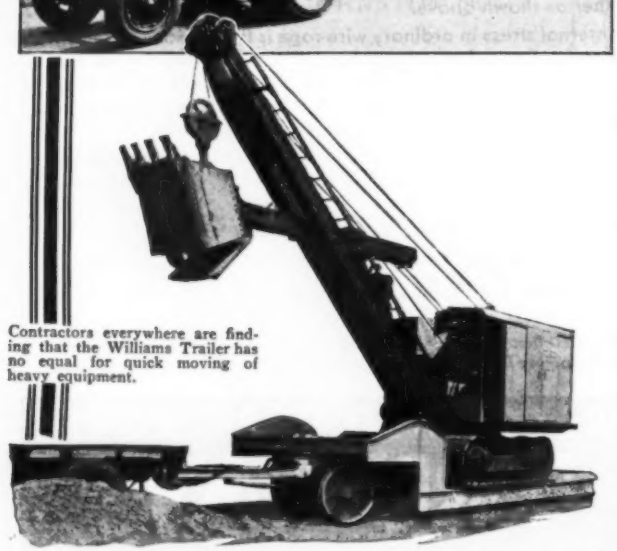
New York Notes

By S. V. SPARKS

At DeKalb and South Portland Avenues, Brooklyn, New York, **James Cahill and Parkinson & Quinn** are excavating 70,000 cubic yards of earth for the basement of the new Brooklyn Technical High School which will be the largest of its kind in the United States. The upper picture shows Parkinson & Quinn's Bucyrus-Erie Gas+Air loading to Mack Trucks and the lower shows James Cahill's B-2 also loading to Macks. Both machines have turned out remark-

Greater Trailer Strength, without increased weight, gives you





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Bigger Pay-Load Capacity

Make your own comparisons! See how *extra strength* has been built into the WILLIAMS "Arch-Girder" Trailer, without added weight.

You can haul bigger loads, at lower costs.

"SHOCK-PROOF" REAR END, with rigid cast-steel frames carrying the rear wheels in pairs. Each frame is free-swiveling, keeping the trailer's load evenly distributed.

STRONGER FRONT END—deep "arch-girder" is reinforced by sturdy stiffeners; no buckling.

EASIER RUNNING. Your truck uses less gas to pull a WILLIAMS Trailer, because every wheel turns on big over-size Timken Bearings.

It will pay you to investigate the Williams "Arch-Girder" Trailer. What size do you need?

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able yardages and the Fredburn Construction Corporation of 60 East 42nd Street, New York City, general contractors for the building, have been greatly pleased with the rapid progress made in the excavation.

Quaker Notes

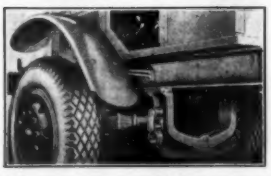
By J. F. TAIT

"Here we see a Bucyrus-Erie GA-2 owned by **Roy Maxwell** of Allentown, Pennsylvania. The machine was loading to Mack trucks, on a State Highway job near Minersville, approximately 30,000 yards—50% of which was hard rock, the remaining 50% fine shale. Roy averaged 800 yards a day all the way through on this tough job. Roy operates his own shovel. He started work on the first of July and we are advised that he has handled 85,000 yards to date."

Bill Sheidy of Wyomissing, Penna., used this Bucyrus-Erie GA-2 on his operations. The shovel is working on a coal stripping job near Coaldale, Penna. for the Lehigh Coal & Navigation Company. Mr. Sheidy had two Gas+Air's and one Diesel+Air machines on this job—all three machines are averaging between eight and nine hundred yards per day in this rough digging. The job will run approximately 150,000 cu. yds.

HUG

Roadbuilder Trucks
with Front Spring Rocker



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Where ordinary chain fails, Taylor Mesaba shovel chain will prove its superiority. Greater Strength and Longer Life are Taylor qualities which have established leadership throughout more than 58 years (since 1873).

Taylor Mesaba shovel chain cuts down repair delays . . . gives extra dividends in shovel output. Each link is branded for your protection . . . master craftsmen have done the rest to give you the best chain science and skill can devise and money can buy.

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. . . . and did not get half as good quality!"

These are the words of a prominent excavator who has used Gatke Moulded Asbestos swinging frictions and brake linings for years.

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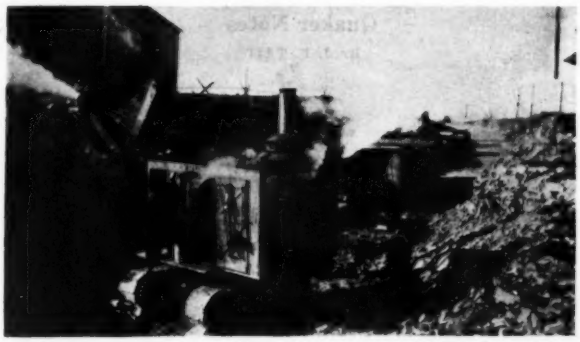
BRAKE AND FRICTION BLOCKS

Shots From the Firing Line — *Continued*

Buffalo and Vicinity

By W. R. BEEBE

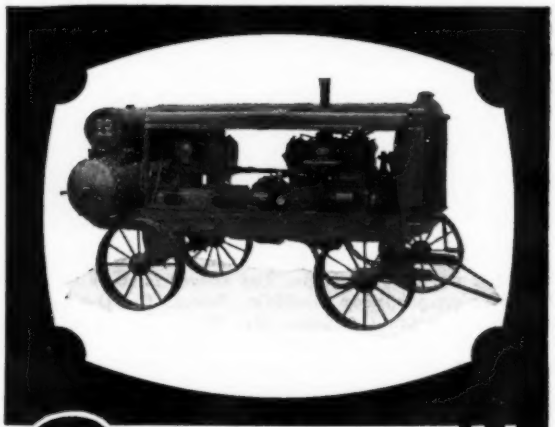


The above picture was taken on **Koetteritz & Blakeslee's** (Little Falls, N. Y.) job at Clayton, N. Y. This job was 7.13 miles long and included a large rock cut 1,700 feet long and 31 feet deep. Koetteritz & Blakeslee started one of their B-2 steamers at each end of this rock cut and three weeks and one day later the above picture was taken showing the clean-up as the two machines came together after moving 21,000 cubic yards of rock. The shovels on this rock cut worked 24 hours per day for 8 days and the rest of the time operated on the regular 10-hour per day shifts.

Pittsburgh and Vicinity

By J. S. WEAVER

By the time this goes to press, **Booth and Flinn**, contractors, will have begun work on the excavation and foundation job of the proposed $8,000,000 Government building at Seventh Avenue and Grant Street, Pittsburgh. They are plan-



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Shots From the Firing Line — *Continued*

ning to put power shovels and other equipment in operation in the next few days. George Hockensmith, Vice President, says, "The Government has signed the excavation contract. Work will begin without ceremony. Then it is our plan to keep activities going day and night on three eight-hour shifts. Every effort will be made to complete our contract within six months."

W. F. Allen has just been awarded ten miles of State Highway Work in Maryland. Mr. Allen expects to get his contract under way in the very near future.

Freeland McHale & Patten are making the dirt fly on their South Hills contract with Bucyrus-Erie Gas+Air Shovel and Caterpillar hauling equipment.

H. W. Kaylor, Hagerstown, Maryland, is making good progress on his State highway work near Hancock, Md.

The Michael Volpe Company is doing great work on their State Highway work on their State Highway contract near Allison Park. No doubt this work will be completed in record time.

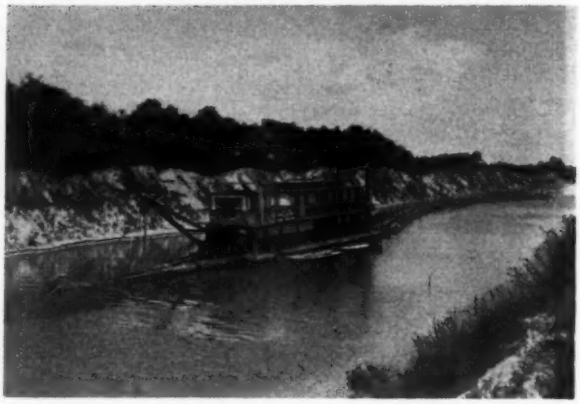
A. D'Alessandro has started his Bucyrus-Erie Type 1030 Shovel and other equipment to work near Homestead, Pennsylvania. Ross Walton is operating the 1030.

Mike Mannella has taken advantage of the open winter on his Allegheny County road work near Coraopolis and is away out ahead of contract time with two Bucyrus-Erie Shovels and other up-to-date hauling equipment. Edward Kelley is manipulating the levers on the 1035.

State Construction Company, New Kensington, Pennsylvania, is ready and raring to go for another season of Highway work with everything in ship shape, including seven Bucyrus-Erie Shovels, a fleet of trucks, tractors, and other modern construction equipment.

R. H. Cunningham & Sons Company have their Allegheny County road job well under way from Hays Station to the new County Air Port.

Florida Notes



The Atkinson Dredging Company of Savannah, Georgia, is at present working on the Inter-coastal Canal between St. Augustine and Miami, deepening the channel from the present depth of three feet to a depth of 9 feet. They are using the above hydraulic dredge "Northwood" which is equipped with a 6-cylinder Atlas-Imperial Diesel engine of 200 HP in direct connection with a 10" centrifugal pump.

Virginia Shots

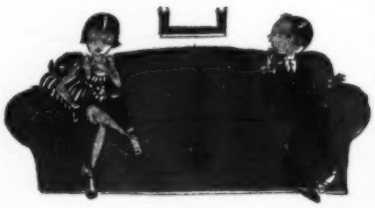
By JOS. S. POTTS, Jr.

The Pendleton Construction Company of Wytheville work their 1030 Bucyrus-Erie shovel equipped with a chain crowd.

It was certainly interesting to watch their State Highway project just out of Roanoke, Virginia, wherein it was necessary to rip up an old macadam road, which, of course, was very shallow work. However, different from most such

(Continued on Page 194)

A Coffing Hoist Moves 'em



Little--but What a Pull

Light weight, easy to operate — you'll find innumberable uses for it around the job.

Now made in 3 sizes— 1500, 3000 and 12,000 pounds capacity.

Either hook can be attached to the load.

Write for Complete information

BUCYRUS ERIE

Bucyrus-Erie Company,
Specialty Department,
South Milwaukee, Wisconsin.

BUSINESS OPPORTUNITY.
An excellent opportunity to cut down handling costs is afforded any contractor who puts a Hayward Bucket to use. Address The Hayward Co., 52-54 Church St., New York, N. Y.
Hayward Buckets

"Hercules" [Red-Strand] Wire Rope Has Stood the Service Test

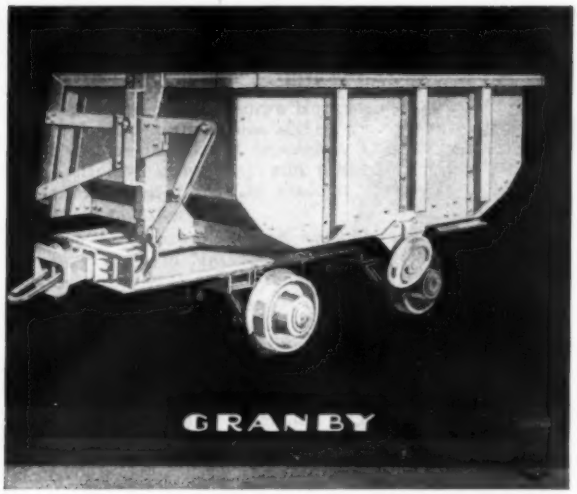
Results are what count, and the actual performance record of "HERCULES" (Red Strand) Wire Rope has proved that it is dependable and economical. Its long life is due to the fact that it is made of material that is correctly balanced in strength, toughness and wearing qualities. Furnished in both the Patent Flattened Strand and Round Strand constructions in order to meet all conditions encountered on the numerous types of wire rope using equipment. Our No. 37 Catalog giving further particulars, will be mailed gladly to anyone interested in better wire rope service.

Made Only by A. Leschen & Sons Rope Co. Established 1857

5909 Kennerly Avenue
ST. LOUIS

New York Chicago Denver San Francisco

In writing to A. Leschen & Sons Rope Co. please use post card bound in the center of this number.



• **stamina** impregnated toughness means durability in the 'quarry' car . . . its impervious qualities are contributed by detail administered in its creation.

• **strength** dwells, not in massiveness alone, but in the ability of the minimum to resist attack . . . In a 'quarry' car the minimum is offered in proportion to the shock you expect.

• **symmetry** offsets the 'quarry' car through grace of line . . . through appeal—by combining structural harmony with ruggedness.

EASTON CAR & CONSTRUCTION COMPANY, EASTON, PA.

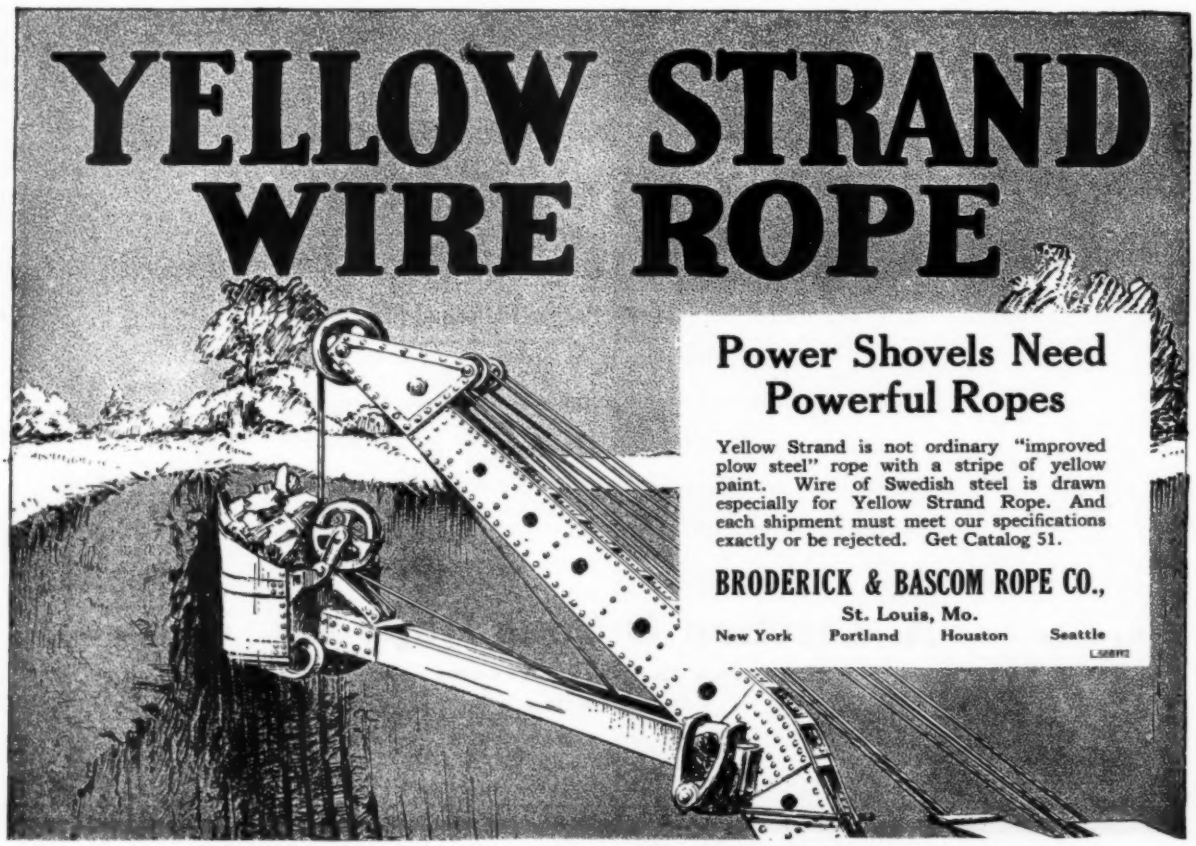
Shots From the Firing Line — *Continued*

jobs, it appears that though this road had been graded to some extent before the macadam was put down, in a great many places the macadam amounted to no more than leveling off a rough rock surface. In other words, when the road was originally built it was not cut to subgrade and the road material built up on a standard section, but had merely been filled over with bituminous material and limestone aggregate, a condition that does not lend itself very well to yardage production or smooth operation of a shovel. It would have done anybody interested in a shovel or its operation good to have seen the flexibility with which this chain crowding device accurately and quickly dug out these unevenesses and left a very well cleaned up situation behind, it, at the same time delivering yardage well up to the best expectations.

The writer is inclined to feel that the Pendleton Construction Company are more than well pleased with their judgment in selecting a Type 1030 with a Chain Crowd for this class of work.

Chicago and Vicinity

At Calgary Beach, Evanston, Illinois, **Mackie-Thompson-Tamm, Inc.**, engineers and contractors of Chicago, have been building a sea wall along Lake Michigan. A roadway borders the beach. Ice and storms at this point endanger the concrete highway and property. As illustrated, piling is driven with Bucyrus-Erie 42-B and Type B-2 steamers and steam piledriver outfits to form a substantial protection.


YELLOW STRAND
WIRE ROPE
Power Shovels Need
Powerful Ropes
Yellow Strand is not ordinary "improved plow steel" rope with a stripe of yellow paint. Wire of Swedish steel is drawn especially for Yellow Strand Rope. And each shipment must meet our specifications exactly or be rejected. Get Catalog 51.
BRODERICK & BASCOM ROPE CO.,
St. Louis, Mo.
New York Portland Houston Seattle

Detroit and Vicinity

On Nelson, Chase and Gilbert Company's job for the Grand Trunk Western Railroad at Birmingham, Michigan, **Operator Hugh Pritchard** of Pontiac has been operating the above Bucyrus-Erie 100-B steamer. He tells us that this shovel has a four foot extension boom, has a lift of 23 feet, a swinging radius of 23 feet, and continues "I think this is the most wonderful shovel I have ever operated. Its sturdy erection and brute strength make it so easy to operate." As you will note Mr. Pritchard makes a nice level cut and piles a healthy load into the Westerns.

Illinois Notes

By C. F. BARTON

Krueger and Posey of Hanover were using their D-2 Diesel shovel to load two Euclid wagons hauled by a Caterpillar tractor when our camera caught the above snapshot of their operations.

St. Louis Notes

By A. J. KOENIG

The War Department has made an allotment of $6,149,800 for a six-foot channel in the Missouri River between Kansas City and its mouth.

The American Bridge Company was awarded the contract for the erection of the superstructure of the M. K. & T. railroad bridge at Boonville, Mo.

The U. S. Engineers Office, Kansas City, will open bids on April 4th, for 1,500 lineal feet standard clump pile dikes on the Missouri River at Contrary Bend.

The Burlington Railroad and the City of St. Louis have reached an agreement for lengthening the span of the railroad's viaduct over Riverview Drive in Prospect Hill. Estimated cost $101,000. L. R. Bowen, engineer.

The Wabash Railroad has acquired 200 acres of land adjoining their yards at Kansas City. This will triple their present capacity.

The Atchison, Topeka & Santa Fe Railway has asked for the approval of the Interstate Commerce Commission of their plans to enter St. Louis. This will necessitate the building of 100 miles of track from Carrollton, Mo., to a point about two miles east of Mexico, Mo., there to connect with the Burlington Railroad, which track the Santa Fe

A STEADY PRODUCER THAT NEVER LOWERS ITS STANDARD . . . .

THIS is what to expect of an Owen—Scooping up capacity loads every time from first to last trip—getting more work done—costing less to do it. Cleaning up the job in fewer hours—After one job is done—ready for the next with no time out for repairs or reconditioning. Just a sturdy, dependable worker doing a "bigger day's work than any other bucket of the same weight and capacity". A reliable producer—A money-saver and money-earner.

Write for Owen facts that substantiate.

A Mouthful At Every Bite

The Owen Bucket Company
6026 Breakwater Ave., Cleveland, Ohio

OWEN Buckets

In writing to The Owen Bucket Company please use post card bound in the center of this number.

Shots From the Firing Line — *Continued*

will use into St. Louis. In connection with this venture a large terminal warehouse will be built near Union Station on ground acquired by the Santa Fe about two years ago.

The Madison Construction Co., of Edwardsville, Ill., was low bidder for the substructure of a bridge over the Crane River near Beardstown.

The first contracts for 1931 for state road work were let by the **Illinois State Highway Commission**, as follows:

> Route 53 in Dupage county and route 66 in Wills county, two projects comprising 15.24 miles of 20-foot concrete paving, to **Powers-Thompson Construction Co.**, Joliet, at $350,000; Route 7, Henry county, 8.77 miles paving to **E. J. Eiff Construction Co.**, Quincy, at $152,693; Route 80, Henry county, 6.49 miles paving to **Cameron-Joyce & Co.**, Keokuk, Iowa, $102,515; Route 122, Tazewell county, 4.52 miles paving to **Jansen, Schafer Co.**, Pekin, $75,-179; Route 150, Bond county, 8.59 miles paving to **Louis Rich Construction Co.**, East St. Louis, $132,-403; Route 99, McDonough county, 2.94 miles grading to **Knapp Co.**, Peoria, $52,179.

At the letting Feb. 28th, the **Missouri Highway Commission** awarded contracts for 36 miles of concrete paving, 26 miles of gravel surface road and 27 miles of graded earth. Following are the larger projects with the successful bidders:

> 7.14 miles, 20-foot concrete in Andrew and Buchanan counties to **Gaines Bros.**, Oklahoma City, $110,530; 10.24 miles 30-foot graded earth in Cass county to **R. G. Aldridge**, Kansas City; 5.52 miles concrete and gravel roads in Cape Girardeau county to **M. J. Davidson**, St. Louis; 10.23 miles 20-foot concrete in Jasper county to **Kelly & Underwood**, Granby, Mo., $219,873; 9.41 miles of 30-foot graded earth in Nodaway county to **R. G. Aldridge**, Kansas City, $122,495.

We Bet on This Boss

The new foreman had a reputation of being a "man of few words." So his first address to the workmen was as follows:

"Now, men, you're all gonna work for me. I want you to know what is what. I can lick any man of you."

One big brawny chap, six feet three inches tall, stepped out in front and said, "you can't lick me."

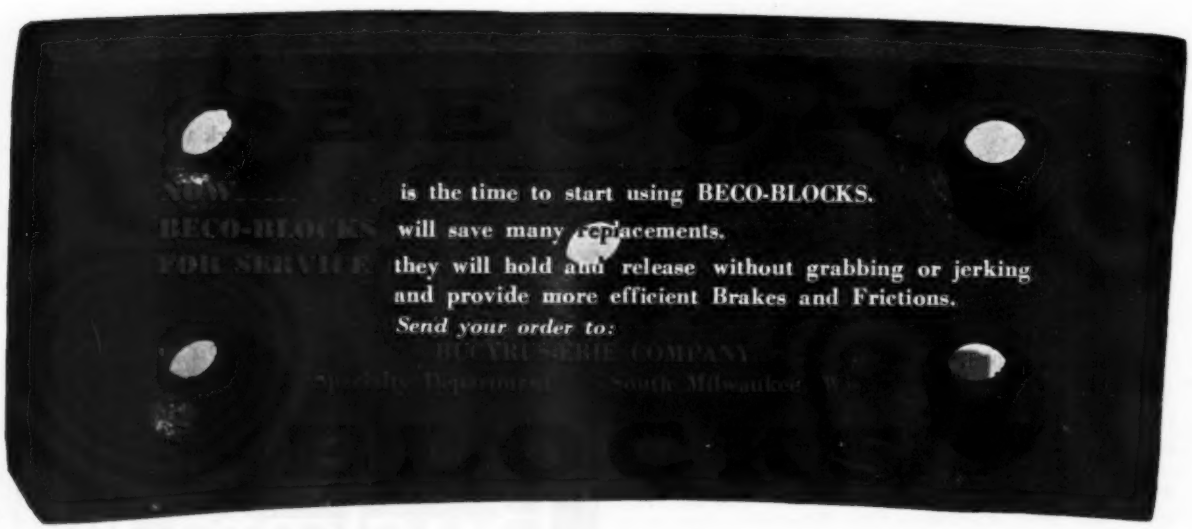
"Oh, can't I?" said the foreman.

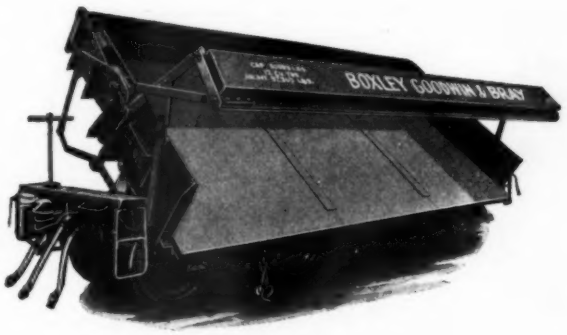
"You can't," said the man.

"Then go to the office and get your pay. I won't have any man that I can't lick working for me."

Southern Notes

The above picture was taken recently on a levee building job of **H. B. Blanks Lumber Company** near St. Joseph, Louisiana. The head tower of one of their Bucyrus-Erie


is the time to start using BECO-BLOCKS.
will save many replacements.
they will hold and release without grabbing or jerking
and provide more efficient Brakes and Frictions.
Send your order to:



KEEP YOUR SHOVEL HUSTLING WITH WESTERN DUMP CARS.

YOU know and the man having the work done knows that Western Dump Cars are a guarantee of satisfactory performance. They will keep your shovel hustling.

Thousands of Westerns are in use but the Western 12-yard Dump Car continues to be the favorite wherever standard gauge equipment is desired. From building railroads to building levees, they are a guarantee of satisfactory performance.

Sturdy construction, few and accessible parts; ability to ride a rough track and keep out of the repair shop; steep dumping angle and large discharge opening — these and other features keep Production up and Costs down.

Our Catalog No. 81-K describes the entire Western line of dependable dump cars. Write for a copy. We can make quick car delivery.

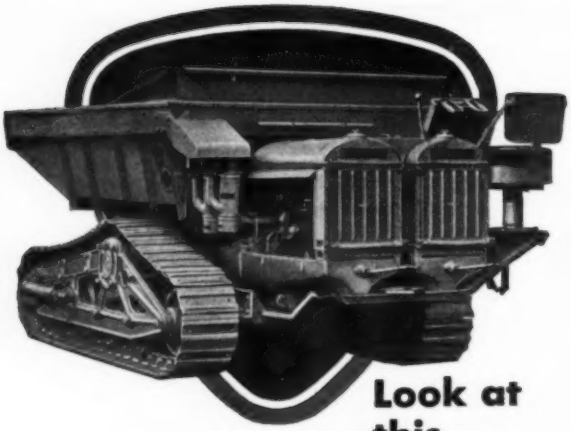
Western Wheeled Scraper Co.

AURORA, ILLINOIS, U. S. A.

The Grand Trunk Railroad has just been extended into Detroit from Pontiac. The illustration below shows Nelson, Chase & Gilbert's 12-yard Westerns "doing their stuff."

WESTERN

In writing to Western Wheeled Scraper Co. please use post card bound in the center of this number.



Look at this

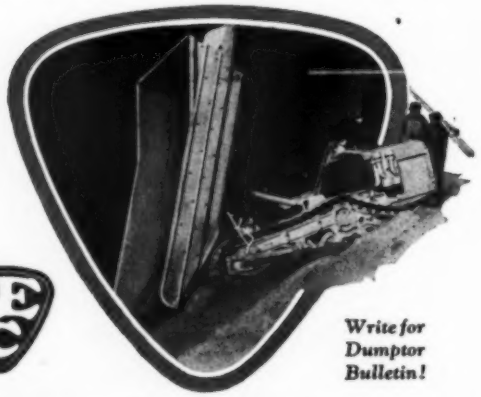
KOEHRING DUMPTOR

IT'S the dirt mover it looks—five cubic yards guaranteed capacity.

No turning and backing to dump. Load is ahead of the driver. He sees where he's going . . . dumps, bulldozes and backs out. *No turning while loaded.*

Two motors, one for each multiplane . . . selective throttle or clutch steering . . . low for elevating grader loading . . . 1⅜, 2½, 3¾ miles per hour.

Truck—Tractor—Bulldozer, all in one.



Write for Dumptor Bulletin!

National Equipment Corporation

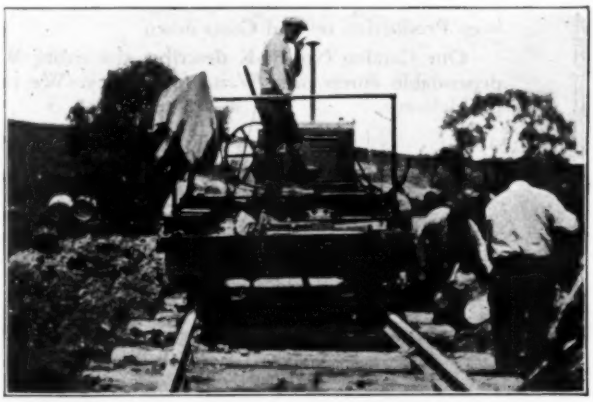
N. 30th St. & W. Concordia Ave., Milwaukee, Wis.

Shots From the Firing Line — *Continued*

steam tower excavators is shown as it appears across the borrow pit with the new levee at the right. Bucyrus-Erie D-2, E-2 and 20-B Diesel draglines are also being used on this job.

By C. F. BARTON

Noble and Croxton are using the above 1035 dragline at Grady, Arkansas, on their levee job on the Arkansas River. The illustration shows excavation of the muck ditch, which runs about 111 yards per station. The record ditch output at the time of writing was 14 stations by U. S. Engineers' measurement. In building the embankment they are hauling from the dragline with five Ford 1½-ton trucks and usually getting from 500 to 700 yards per 10 hours. This, however, does not represent the capacity of the machine, as the five trucks used are unable to keep the dragline busy. The head office of Noble and Croxton is at Fayette, Mississippi. Our picture shows Mr. Croxton standing alongside of the machine.



A Machine for Shifting and Raising Your Track

If you are operating a quarry or open pit mine, engaged in a construction job where track must be raised and shifted frequently, here is a money saving investment. It is no longer necessary to maintain a large labor gang for this work. No longer need there be delays to your other operations. This machine and a few men will do the work, saving you time and money. If you shift or raise track, you need this machine.

NORDBERG MFG. CO., Milwaukee, Wis.

THE NORDBERG PATENTED TRACK SHIFTER

A 6238-½

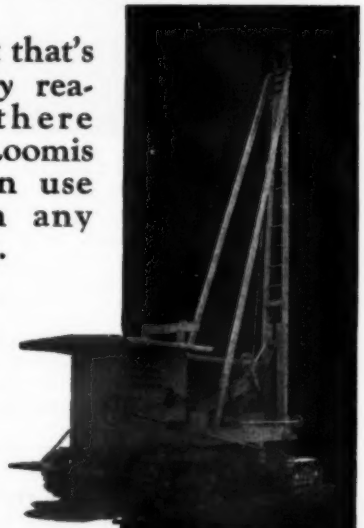
The above picture was taken on the operations of **Gifford-Hill & Co., Inc.**, at Turkey Creek, Louisiana. At the location, Gifford-Hill Co., Inc., of Dallas, Texas, have a gravel washing plant. The illustration shows one of their Bucyrus-Eries, a 1035 dragline, digging a ditch 22 feet deep to drain the plant yard. This machine will later be used to stock pile and load gravel with a clamshell. The machine is equipped with a 40-foot boom and a ¾-yard drag bucket.

Washington Notes

The Siems Spokane Company of Spokane has recently been awarded contract for clearing, grading, surfacing with crushed stone, draining and construction of bridges on about 2.5 miles of State Road in Adams County, involving about 35,520 cubic yards of excavation; 7,270 cubic yards of crushed stone surfacing, 795 lineal feet of pipe culverts, one treated timber trestle 64 feet long, one reinforced concrete girder bridge 269 feet long with 24 foot roadway over the Northern Pacific Railway Company's tracks and other items.

Rugged?

Yes, but that's not the *only* reason why there are more "Loomis Clippers" in use today than any other make.



Made in steel or wood frame or all steel for wire or Manila line.

Write for full information.

THE LOOMIS MACHINE COMPANY
(Established 1842)
K Street, TIFFIN, OHIO

Don't Let Night Rob You of the Hours You Need Most

Don't let night rob you of the hours you need *now*—before winter stops your job.

With the Novo Flud-Lite Lighting Unit you get almost daylight lighting all night long—at a cost of only a few cents per hour.

The Novo Flud-Lite Unit is extremely compact and easy to install on cranes, shovels, pavers, and other construction equipment.

The standard generator is directly connected to a standard 1, 2 or 4 cylinder Novo Timken Roller Bearing equipped engine—mounted on a welded steel base. Lights are standard 110 volt—or flood lights may be used. Operation is dependable—and foolproof.

Built in sizes ranging from 1¼ to 25 KW—to fit virtually any construction job. Write for complete details.

NOVO ENGINE COMPANY
222 Porter Street, Lansing, Michigan
Clarence E. Bement, Vice-Pres. and Gen. Mgr.

NOVO
Flud-Lite Lighting Units

CRANE—CLAMSHELL—
DRAGLINE—BACKFILLER
all as required in a day's operation

Model O meets the urgent present-day need for a smaller — ⅜ *yard* — revolving Utility Crane providing a greater working range at lower cost.

Ruggedness is the dependable foundation upon which this Buckeye is built. From steel-treaded crawlers to structural, adjustable-length boom, it is entirely capable of giving steady performance in varying materials and under shifting conditions. Rotating and traveling bases are sturdy, one-piece electric steel castings. Heavy-duty gasoline motor is mounted on a solid cast sub-base, forming a complete assembly with the radiator, clutch and two-speed transmission unit. Gears are machine-cut from solid blanks, heat treated and hardened. Fast hoisting and swinging speeds are supplemented with easy one-man control.

As required in a day's operation, Model O is readily converted to Clamshell, Crane, Dragline or Backfiller service. That increased field of usefulness multiplies its earning ability. May we send you detail specifications and the interesting price of this Buckeye?

The Buckeye Traction Ditcher Co.
FINDLAY, OHIO
There's a Buckeye Sales and Service Office Near You

for over thirty years Buckeye

Shots From the Firing Line — *Continued*

California Notes

Merritt, Chapman & Scott were low bidders on the Maricopa-Ventura National Highway, involving a half million yards of excavation.

The above illustration shows a Bucyrus-Erie 1030 shovel loading to Sterling trucks in excavating for the site of a new steam power plant of the San Joaquin Light and Power Corporation at Fresno. Excavating is being handled by **Stewart & Nuss**, well known Fresno contractors.

Oregon Notes

By W. J. BRETT

The Western Lumber Company, of Westfir, Oregon, used the above Bucyrus-Erie Diesel+Air for building and logging railroad grades. This machine was purchased in June, 1930, and from that date until the following December worked on logging for railroad grades, showing a cost of 6 cents per yard, excluding depreciation and interest. During that time there was no time lost nor expense for repairs.

In January of this year the Western Lumber Company rented the shovel to Lane County, Oregon, to build about one mile of county road. Three-quarters of this work was very light digging, but the last quarter mile was in heavy

MEETING PLACE OF CAPITAL AND LABOR
THE KOENIG LABOR AGENCIES
Established 1875
ST. LOUIS
612 Walnut Street
Main 2766 and 2767
KANSAS CITY
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HELP OF ALL KINDS FURNISHED FREE

AMERICAN
STEEL & WIRE COMPANY
WIRE ROPE

SO important is wire rope to industry—on excavating machines—on hoists—on elevators—and for a thousand and one purposes—that its users can afford only to specify a brand of proved dependability, economy and long life. Because of its outstanding records—and the known reliability of its maker—American Steel & Wire Company American Wire Rope will be found on most equipment where service requirements are severe.

Made by the Largest Wire Rope Manufacturer in the World

The illustration shows American Wire Rope in use on the world's largest electric shovel.

1831 1931

AMERICAN STEEL & WIRE COMPANY

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

208 South La Salle Street, Chicago — And All Principal Cities

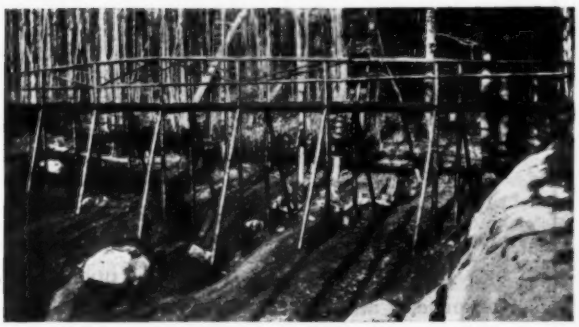
Pacific Coast Distributors: Columbia Steel Company, Russ Building, San Francisco

Export Distributors: United States Steel Products Company, New York

rock work, and it was here that the above picture was taken. This job was recently completed with the only repairs required being the replacement of two dipper teeth. No records were kept on this job as to the unit cost or output.

Shovel Builds Golf Course

(Continued from Page 171)

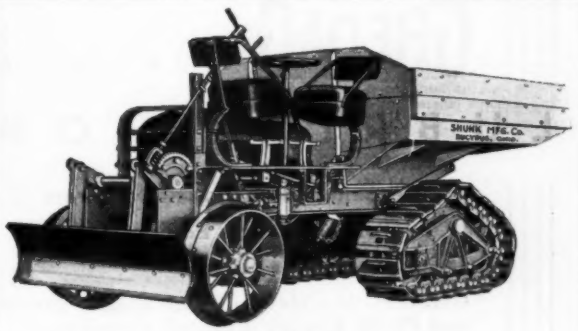


This rustic bridge on the new golf course is an excellent spot from which to look out over the natural beauty of the surroundings.

high and 160 feet long and one 20-foot bridge 140 feet long. Par for the course is 72.

This is one of the most beautiful courses in the country and our good friend Emil Block, who has superintended this job, is to be congratulated.

Donald Finlayson is operating the Gas+Air.



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CAMEL

GRAVITY

TRACTOR DUMP WAGON

Combines in one heavy duty unit features of Truck, Tractor, Trailer and Bulldozer.

Capacity, 4 Yards; With Sideboards, 5 Yards

Crawlers, Steel Wheels and Pneumatic Tires—all interchangeable on same axle.

Designed and built by

SHUNK MANUFACTURING COMPANY

Established 1854

105 Auto Ave. — Bucyrus, Ohio.

"NACO"

will add 1/3 to 1/2 to the life of your Shovel Chains and Draglines

In other words—

NACO Shovel Chains and Draglines will, on account of their greater strength, hardness and uniformity, last longer, operate smoother and correspondingly reduce your chain maintenance costs.

Write for Circular No. 89-A

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY

General Office—CLEVELAND, O.

GREDAG . . . . .

LUBRICATION

Recommended by Manufacturers of Excavating Equipment

Because—

GREDAG is a blend of high quality grease and *PURE Electric Furnace Graphite.*

GREDAG develops a graphitic bearing surface that is readily wet by grease.

Insured Lubrication is afforded by this affinity of graphite for grease and oil.

GREDAG efficiently protects and lubricates equipment that is exposed to the weather, to water, or to grit and dust.

GREDAG reduces cost of lubrication and maintenance.

Lubricate exposed gears and cables with GREDAG No. 16.

Write for Literature

NATIONAL CARBON COMPANY, INC.
Carbon Sales Division, Cleveland, Ohio
Unit of Union Carbide UCC and Carbon Corporation
Branch Sales Offices
NEW YORK PITTSBURGH CHICAGO SAN FRANCISCO

Six Companies, Incorporated to Build Hoover Dam

(Continued from Page 174)

Bucyrus-Erie Diesel loading to Le Tourneau chariots on a heavy rock cut.

Los Angeles with J. S. Gordon of Denver handling a sub on tunnel construction.

The 7 mile highway from Boulder City to the Dam is being pushed through at top speed by R. G. Le Tourneau, Inc. of Stockton, California subbing for The General Construction Company of Seattle.

A word of warning is in order to those who wish employment on Hoover Dam. It is reported that over 10,000 job seekers have already presented themselves at Las Vegas. This is many times the number that can be used on the construction work.

Laying 9-Foot Sewer in Kansas City

(Continued from Page 170)

while the maximum was 20 feet. Blasting was necessary in portions where solid rock was encountered, and 35% dynamite was used. Martin G. Torson, who supervised the job in person, believes in blasting with smaller charges and more of them. "It does a more even job in loosening rocks and dirt," is the way Mr. Torson puts it.

The Boyle Construction Company section was completed July 1st, that of the Torson Construction Company on August 23rd.

An Up-to-date Version

Jim: "Say, Joe, can you tell me why there are fewer railroad accidents than automobile accidents?"

Joe: "Well, perhaps not exactly, but I think it is because the engineer isn't always hugging the fireman."

TRADE NOTES

An announcement was recently received that the Gatke Corporation has succeeded Thomas L. Gatke, manufacturer of asbesgraphite moulded friction blocks, asbestos brake linings, clutch facings, etc. Thomas L. Gatke will be president and treasurer of the new Corporation. Coincidental with the announcement of incorporation, Mr. Gatke notified his many friends that "the incorporation of our business permits of a more flexible organization and facilitates the establishment of branch offices and warehouses, now necessary to further expand our operations, and to expedite the execution of orders. The Gatke policy of engineering developments, and the manufacture of quality products will continue as before, and the same consideration of good service will prevail."

The Trackson Co., Milwaukee, Wis., announces the appointment of Dow-Potter Company, Inc., Erie County Bank Building, Buffalo, New York, as a new distributor for Trackson Tractor equipment.

This distributor will handle the complete Trackson line of crawlers, shovels, hoists, cranes, bulldozers, etc., as well as a stock of repair and replacement parts for these machines.

BOOK REVIEWS

Modern Diesel Engine Practice.—A complete textbook on every phase of Diesel engineering, operation, maintenance and repair, by Orville Adams, a recognized consulting Diesel engineer and authority on Diesel engine operating practice. 650 (6x9) pages—over 400 engravings. Published by the **Norman W. Henley Publishing Co., 2 West 45th Street, New York.** Price $6.00 net.

This book, one of the most complete on the subject yet published, was prepared to combine a text for study and reference and a practical manual on operation and repair in one volume. It includes instructions suitable for the owner, operator, repairman and engine salesman, and is also valuable to all students.

The information is presented in non-technical language, and is suitable for classroom use or home study. Twenty-one chapters detail technical data for Diesel applications, and review modern installation practice, including the Standards of the Diesel Engine Manufacturers' Association and the Underwriters Regulations for Standard Installation. Numerous tables, charts and operating data are analyzed.

High speed oil engines of recent design for all mobile applications, such as shovels, dredges, draglines, industrial and railroad locomotives and tractors are shown. Several

POSITIONS WANTED

Space under this heading is available at $5.50 per inch or fraction thereof.

Address all box numbers c/o The Excavating Engineer at South Milwaukee, Wisconsin

STEAM SHOVEL OPERATOR

10 years' experience on all types of steam machines. Prefers position on steam shovel, any make, type or size. Will go anywhere. 47 years of age and married. Can do own repair work and furnish best of references. Located in Illinois. Box 1301.

SHOVEL OPERATOR

6 years' experience on shovel and crane on highway excavation. Prefers position on Bucyrus steam shovel, any size. 32 years of age and married. Will go anywhere. Can do own repair work and furnish best of references. Located in Alabama. Box 1302.

DRAGLINE OPERATOR

12 years' experience on steam, electric, gasoline and Diesel machines on sewers, levees, dam, railroad grade and coal stripping. Prefers position on Bucyrus electric or steam dragline: Class 24, Class 14, Class 175, 50-B, 30-B or smaller size. 31 years of age and married. Will go anywhere. Can do own repair work and furnish best of references. Box 1303.

DRAGLINE OPERATOR

8 years' experience on gasoline machines on construction (grade) drainage and levee work. Prefer position anywhere in the U. S. A. 36 years of age and single. Can do own repair work and furnish best of references. Located in Illinois. Box 1304.

SHOVEL AND LOADER OPERATOR

20 years' experience on Bucyrus and Marion steam shovel, also 10 years' experience on loader around strip mines. Prefers position on steam shovel or loader. 38 years of age and married. Will go anywhere. Can do own repair work and furnish excellent references. Located in Kansas. Box 1305.

SHOVEL-DRAGLINE-CRANE OPERATOR

6 years' experience on Marion, Bucyrus-Erie and Northwest shovels, draglines and cranes on steel concrete excavating. Prefers position on shovel or dragline. Will go anywhere in the U. S. A. or foreign country. Located in Ohio. Can do own repair work and furnish good references. Box 1306.

DRAGLINE-SHOVEL OPERATOR

Experience covers 23 years on highway and railroad grading, drainage, quarry excavation, loading iron ore and pile driving. Can give satisfaction. Can do own repairing and furnish good references. Located in Wisconsin. Box 1309.

DRAGLINE-SHOVEL OPERATOR

Have operated Bucyrus-Erie 50-B, 41-B, 20-B and 30-B machines on highway and railroad grading, rock excavation and drainage work. First class repairman. A-1 references. Will go anywhere. Located in Vermont. Box 1310.

DRAGLINE-SHOVEL OPERATOR

20 years' on all makes of machines on grading, rock excavation, mining and drainage work. Can do own repair work, also furnish good references. Location, Illinois. Box 1311.

SHOVEL OPERATOR

Experienced on stripping operations and dam work. Prefer operating Bucyrus-Erie Type B machine anywhere. Married. Can make own repairs and can furnish reliable references. Present location, Pennsylvania. Box 1308.

SHOVEL OPERATOR

14 years' experience on steam and gasoline Marion, Northwest, and Thew shovels, draglines and cranes in highway, railroad grading and quarries. Prefer operating Northwest or Bucyrus-Erie anywhere except tropics. Can do own repair work and all overhauling. Single and sober. Box 1307.

DRAGLINE OPERATOR

12 years' experience on Bucyrus-Erie Electric, gasoline and Diesel machines on railroad, highway, levee and drainage work. Willing to go anywhere in Middle West. Married. Can do own repairing and can furnish reliable references. Located in Missouri. Box 1312.

SHOVEL OPERATOR

Experience includes 19 years on highway grading and stripping operations. Can handle Gas+Air and steam machines. Will go anywhere on any machine. Can do own repairing and furnish good references. Married. Present location, Pennsylvania. Box 1313.

SHOVEL OPERATOR

Have 20 years' experience on Bucyrus and Erie steam machines on highway grading, gravel pit, rock quarry and dirt excavating. Will go anywhere in U. S. A. Married. Can do own repairing and furnish A-1 references. Located in Mississippi. Box 1314.

CLAMSHELL-DRAGLINE-SHOVEL OPERATOR

Have operated Electric, Gas+Air, gasoline and steam machines for 22 years on all types of excavating and materials handling. Will handle any type machine anywhere in U. S. A. Married. Can make own repairs and furnish excellent references. Location, Ohio. Box 1315.

FIREMAN AND SHOVEL REPAIRMAN

Experienced on steam and electric machines. Will go on any type machine any place in U. S. A. Married. Can furnish good references. Location, Pennsylvania. Box 1316.

SHOVEL OPERATOR

10 years' experience on Gas+Air and steam machines on highway grading and basement excavating. Married. Can furnish reliable references and can do own repairing. Located in Virginia. Box 1317.

OPERATOR

14 years' experience on Bucyrus-Erie steam machines type 175-B, 30-B, 150-B and Marion shovels on coal stripping, highway and railroad work. Will go anywhere in U. S. A. Can furnish reliable references. Present location, Alabama. Box 1318.

Book Reviews — *Continued*

chapters with layout drawings consider the stationary Diesel engine. All auxiliaries, air filters, pyrometers, exhaust silencers and centrifuges are described and illustrated. The instructions on lubrication, maintenance, operation and repair of engines are unusually complete.

The Packard-Diesel aircraft engine and the Ingersoll-Rand locomotive oil engine are described and illustrated in detail, as well as the Cummins Automotive Diesel, which has received a certificate of performance because of its use in a racing automobile and for holding economy records in road work. We do not hesitate to recommend this book to all interested in Diesel engines.

The sixth edition of **Diesel Power Plant Handbook** (formerly the Oil Engine Power Plant Handbook), published by **Diesel Power**, will be no end of value to those using or considering the use of Diesel power in the field of the industrial oil engine, whether it be mobile, semi-portable or stationary. This book of 280 pages (size 8x11 inches) profusely illustrated, covers in the "Engine Room Guide" fourteen sections of everything from "properties" to "lubricating oils." A catalog section, together with the 3-page introduction, "Position of the Diesel Engine in American Industry," completes the handbook. Editor—Julius Kittner, B.Sc., Editor of Diesel Power.

For further information regarding this handbook, write **Diesel Power, 521 Fifth Avenue, New York City.** Please mention The Excavating Engineer.

Applying safety principles to small plants is the subject of a report issued by the Policyholders Service Bureau of the **Metropolitan Life Insurance Company.** According to the report, investigations indicate that in general the accident frequency rate in small plants is relatively higher than in large organizations. This situation is stated to be probably due to the fact that whereas many of the larger establishments conduct some type of safety activity, comparatively few of the small properties have developed definite accident prevention programs. The report proceeds to review some of the effective safety operations which can be developed and conducted by the executives and supervisory force of small plants as a part of their regular duties, and in a manner which will not impose any undue burden upon the organization.

Industrial executives interested in this subject may secure copies of this report which is entitled "Safety Activities in Small Companies" by writing to the Policyholders Service Bureau at One Madison Avenue, New York City.

"Traction for Action" is the title of an illustrated twenty-four page booklet just published by **Caterpillar Tractor Company, Peoria, Illinois.** Working on the theory that pictures tell the story better than words, Caterpillar has cut the written copy short, using strong headlines (such as "Why the world is turning to tracks for traction," "When wheels fail 'Caterpillar' tracks grip," "Less ground pressure than a man's foot," "Sure footing for big loads in the snow," etc.) to carry the pictures. Caterpillar's publications are always worth reading from cover to cover, but to the reader who is considering tractor equipment, "Traction for Action" will be especially valuable.

Regulations, designed to insure the safest conditions possible in the **transportation of explosives in motor vehicles** have been drawn up by the United States Bureau of Mines, Department of Commerce, for the guidance of its own employees, and published in Information Circular 6330 ("Some Hazards of Transporting Explosives in Automobile Trucks") by C. W. Owings, associate engineer and J. M. Harrington, senior foreman miner, in the hope that they may be of value to others whose duties require the movement of explosives by automobile.

This circular also contains rules for transporting explosives, as recommended by the Institute of Makers of Explosives, and standard specifications for trucks hauling explosives, prepared by one of the large powder manufacturing companies. The report also recounts a number of recent accidents and gives recommendations as to how such accidents might be avoided. Copy may be had by writing the United States Bureau of Mines, Department of Commerce, Washington, D. C.

The Union Chain and Manufacturing Company of Sandusky, Ohio, has just issued a new 124-page catalog on Silent and Roller Chain. The catalog contains not only complete data on these types of chain but also engineering data of practical value to chain users in figuring drives. It also contains complete information and engineering data on sprockets used in conjunction with Silent and Roller Chain Drives and on chain attachments for special purposes. A copy of the new catalog will be sent to those writing direct to the company and mentioning this paper.

Mule haulage costs as compared with tractor haulage costs are given in a small booklet prepared by **American Tractor Equipment Company, Oakland, California.** These comparative costs for moving dirt on short hauls have been based on experience in the field and several months' careful observation by N. G. Livingston. Copy of this booklet may be had by writing the above manufacturer. Ask for Bulletin 430 — and please mention this magazine.

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TYPE "B" ERIE STEAM SHOVEL, caterpillar mounted equipped with 21-foot 3-inch boom, 18-foot 6-inch dipper handle, power boom hoist, ¾-cubic-yard dipper; in excellent condition; just installed $400 worth of repairs. Located vicinity Kansas City. Box 80-SS.

USED B-2 BUCYRUS-ERIE HIGH LIFT SHOVEL NO. 9997. Massachusetts Boiler. Excellent condition. Located New York. Price $5000.00. Box 154-SS.

31-B STEAM SHOVEL, Number 4880, in very good condition; priced right; located Pittsburgh, Pennsylvania. Box 128-SS.

NORTHWEST DRAGLINE, Model 105, shop number in 2000's; 45-foot boom, fairlead and no bucket. In good condition, $5000.00. For further particulars address communications to Box 114-SS.

OSGOOD GASOLINE DRAGLINE, 1¼-cubic-yard bucket, 22-foot boom, 16-foot dipper handle, manganese front dipper, 4-cylinder Le Roi motor, 125 h.p., 45-foot boom, fairlead, no bucket, $6000. For further particulars address communications to Box 115-SS.

1½-YARD OSGOOD STEAM SHOVEL also dragline and clamshell equipment with 1-yard drag and clam buckets. Bought in August 1926 and reported to be in first class operating condition. Located near Detroit. Box 149-SS.

TWO TYPE "B" ERIE STEAM MACHINES, mounted on "cats," ¾-cubic-yard dippers, shop numbers 2300 and 2301, 19-foot booms and 16-foot dipper handles. Box 83-SS.

ERIE TYPE "GA-2" GAS + AIR SHOVEL, shop number 4117, mounted on spur gear drive caterpillar trucks, and equipped with a 24-foot boom; 18-foot, 4-inch dipper handle; 1-cubic-yard manganese cast front socket inserted tooth dipper; power boom hoist; air self-starter, and all equipment and appurtenances in accordance with the specifications of the Bucyrus-Erie Company, f.o.b. cars shipping point Virginia. Box 126-SS.